Appendix: Park Summaries

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Acadia National Park (ACAD) Bar Harbor, Maine

Background

Acadia National Park was established in 1916 as the Sieur de Monts National Monument by Presidential Proclamation 1339. In 1919, the park was renamed Lafayette National Park, and in1929, the park name was again changed to what we known it as today, Acadia National Park. The 1929 legislation also authorized expansion of the park, and in 1986 the permanent boundary was established. Today, Acadia National Park protects 47,498 acres, including the highest rocky headlands on the Atlantic shore of the United States. The Park protects 30,300 on Mount Desert Island, 2,728 acres on Isle Au Haut, 2,194 acres on Schoodic Peninsula. Further, Acadia holds 10,452 acres in conservation easements and maintains interest in 1,110 other acres, all within the Acadian Archipelago of down east coastal Maine.

The glacial history that shaped Acadia is especially apparent in Sommes Sound, the inlet bisecting Mount Desert Island and the only fjord on the east coast of the United States. Located in the Northeastern Coastal Zone ecoregion at 44 degrees latitude, the climate of Acadia is primarily influenced by maritime conditions. Special attention has been drawn to the role the islands play as nesting and wintering sites for a large number and wide diversity of bird species. The park supports breeding pairs of peregrine falcon (*Falco peregrinus*) and bald eagles (*Haliaeetus leucocephalus*) as well as the largest wintering population of harlequin ducks (*Histrionicus histrionicus*).

Acadia is located in a broad transition zone between southern deciduous and northern coniferous forests with local habitats ranging from seashore to mountaintop including old growth spruce forests, wetlands, and jack pine forests. Especially noteworthy natural resources in the park include old growth forests, sub-alpine communities, heaths, meadows and marshes, as well as a diverse flora and fauna. Nearly 20% (183) of the vascular plants known to reside in the park have been designated as locally rare or State-listed, and 6 are globally rare. These numbers might increase with additional floristic inventory. One third of the vascular plants found in the park (283 species) are exotic.

Acadia is designated a mandatory Class I federal area under the Clean Air Act, placing stringent constraints on facilities emitting air pollutants that may affect park resources.

Mission

The National Park Service at Acadia National Park protects and conserves outstanding scenic, natural and cultural resources for present and future generations. These resources include glaciated coastal and island landscapes, biological diversity, clean air and water, and a rich cultural heritage.

Acadia National Park also offers opportunities for high-quality non-consumptive recreation, education and scientific research.

Legislation

Document	Description
General Management Plan, 1992	"Management actions are directed to retain and enhance the unique qualities and resources of the park, particularly the natural resource base on which Acadia National Park was established."
Resource Management Plan, 1998	The RMP discusses the natural resources within the park and the conditions and threats to these resources. Acadia is a "transition zone between temperate, deciduous, and northern coniferous forests overlaying glacially sculptured granite mountains with interspersed glacially scoured lakebeds and bounded by high rocky headlands. Noteworthy natural resources within the park include old-growth forests, sub-alpine communities, heaths and marshes, an exceptionally diverse flora, over 40 species of mammals, and documented sightings of over 300 bird species."
Enabling Legislation	"The topographic configuration, the geology, the fauna and the flora of the island, largely embraced within the limits of the Monument, also, are of great scientific interest." • July 8, 1916: Presidential Proclamation 1339 Establishes Sieur De Monts National Monument. • February 26, 1919: 40 Stat. 1778 Establishes Lafayette National Park from Sieur De Monts Monument. • January 19, 1929: 45 Stat. 1083 Authorized Park to accept donations of land in fee or easement, including buildings or money. Changed park name from Lafayette to Acadia. • May 23, 1930: 46 Stat. 377 Directs Navy to transfer Seawall radio station and 233 acres to the park. • August 24, 1935: 49 Stat. 795 Directs Navy to transfer Otter Cliffs Radio Station to the park; directs the park to transfer to the Navy a new radio site at Schoodic. • October 15, 1982: PL97-335 Established park boundary at Isle au Haut and required that a carrying capacity for IAH be established. • September 25, 1986: PL 99-420 Established park boundary (except Isle au Haut) and authorized acquisition of private lands within the boundary, deletion of tract outside the boundary by exchange, and authorized acquisition of conservation easements.

Natural Resources

Intertidal habitat	Terrestrial habitat	Aquatic/wetland habitat	Resource Issues
• Intertidal - 200 acres • Coastal salt marsh - 93 acres	• Spruce-fir-hardwood - 16300 acres • Pine-hemlock-hardwood - 2180 acres • Northern hardwoods - 775 acres • Pine forest - 1820 acres • Aspen-birch forest -	• 14 Great ponds - 2370 acres • 10 Small ponds - 50 acres • Forested wetlands - 890 acres • Open/shrub wetlands - 660 acres	• Atmospheric deposition/ozone • Water quality • Contamination • External land-use/development • Roads • Visitor impacts, Boats

Intertidal habitat	Terrestrial habitat	Aquatic/wetland habitat	Resource Issues
	2870 acres • Rocky uplands - 8170 acres • Rocky coast - 290 acres • Cultural vegetation - 275 acres	• Peatlands - 690 acres • Springs/seeps	• Harvesting • Land management • Deer, beaver, feral animals/pets • Invasive species • Climate change • Coastal erosion/sea level rise

Vital Signs and Related GPRA Goals			
Category (Level 1)	**Element (Level 2)**	**Vital Signs and Measures[1]**	**GPRA Goal[2]**
Air and Climate	Air Quality	Ozone, acidic deposition and stress, air contamination	By 09/30/2005, air quality in Acadia National Park has remained stable or improved.
	Weather and Climate	Air temperature, precipitation by type, relative humidity, total solar radiation, wind speed and direction, snow water equivalent and depth	None established
Geology and Soils	Geomorphology	stream geomorphology, lake morphometry, substrate composition, shoreline change and sea level rise	None established
Water	Hydrology	Water depth and duration	None established
	Water Quality	Water chemistry, nutrient enrichment, contamination, aquatic macroinvertebrates	By 09/30/2005, Acadia National Park has unimpaired water quality
Ecosystem Pattern and Process	Land Use/Land Cover	Monitor changes within and adjacent to park	None established
	Extreme Disturbance	Harmful algal blooms	None established
Biological Integrity	Species of Special Concern	Intertidal, wetland, forest, and freshwater communities; forest vegetation; mammals, fish, and birds	By 09/30/2005, 100% of the 1999 identified Acadia National Park park populations [1 of 1] of the State of Maine listed species of special concern are at a scientifically acceptable level.
	Exotic Plant Species	Early detection of exotic species	By 09/30/2005, 55 (22%) of 55 acres of Acadia National Park's lands impacted by exotic vegetation (purple loosestrife) targeted by September 30, 1999, are contained.

Vital Signs and Related GPRA Goals			
Category (Level 1)	**Element (Level 2)**	**Vital Signs and Measures[1]**	**GPRA Goal[2]**
	T&E Species	Not a selected vital sign or measure	By September 30, 2005, 1 (100%) of Acadia National Park's 1 identified populations of federally listed threatened and endangered species with critical habitat on park lands and/or requiring NPS recovery actions, as of 1999, have a stable status.
Human Use	Visitor Usage	Identify and monitor impacts associated with increased visitation	None established
	Visitor Satisfaction	Not a selected vital sign or measure	By 09/30/2005, 98% of the park visitors to Acadia National Park are satisfied with appropriate park facilities, services, and recreational opportunities.
	Consumptive Use	Intertidal harvesting	None established
	Resource Knowledge	Not a selected vital sign or measure	By 09/30/2005, 12 of 12 primary Acadia National Park's primary natural resource inventories identified in a Resource Management Plan and General Management Plan are completed

Notes:
[1] Vital signs and measures were identified by park staff, network staff, and cooperators to fulfill the objectives of the National Park Service Inventory and Monitoring program, and may not directly parallel the needs and/or requirements of any established GPRA goals.
2 GPRA Goals may not exist for all vital signs and/or measures, and not all GPRA Goals are identified on this list.

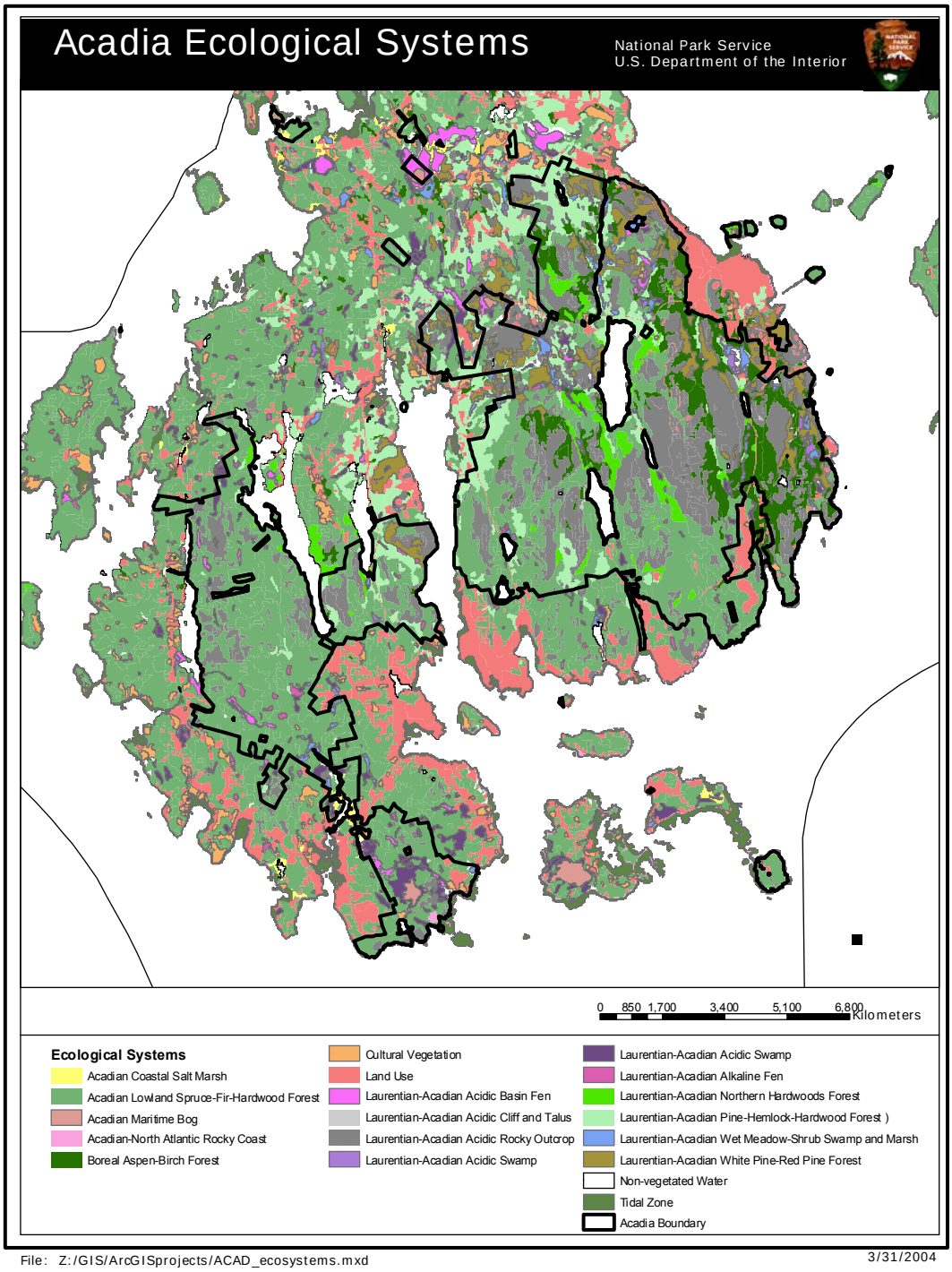

Figure B.1. Ecological Communities of Acadia National Park.

Appalachian National Scenic Trail (APPA), Maine-to-Georgia

Background

Established as the first National Scenic Trail by Congress with passage of the National Trails System Act in 1968, the Appalachian National Scenic Trail is the longest unit within the National Park System, stretching from Springer Mountain, Georgia to Mt. Katahdin, Maine. The Trail is administered cooperatively between the National Park Service and over 105 agencies and organizations. The trail passes through 14 states, 6 existing National Park Service units, 7 National Forests, and numerous state parks and forests.

The trail corridor averages 1000 feet in width, is comparable in size to Rocky Mountain National Park, and has visitation levels comparable to Yosemite.

The trail passes through five National Park Service Inventory and Monitoring networks. The portion of the trail that traverses the Northeast Temperate Network extends from Mount Katahdin to the Pennsylvania-Maryland border, comprising nearly 80% of the Appalachian Trail land that is owned by the National Park Service. This section of the trail covers 1,108 miles, includes 155,972 acres of state and federally managed lands, and has yielded 1,003 documentations of rare species occurrences and exemplary ecological communities (based on Natural Heritage Inventories). Within this section, the Trail traverses 4 ecoregions, incorporating habitats ranging from wetlands to alpine vegetation communities, and is representative of all terrestrial communities in the Northeast. The Trail contains some of the last remaining old growth forests in the East, some of which are subjected to high levels of human disturbance including air pollution, land cover change, and invasive species.

For the purpose of developing an inventory and monitoring program strategy, the five networks through which the trail passes have identified the Northeast Temperate Network as the lead Network for the Appalachian Trail. In return, the Northeast Temperate Network has committed to work with other networks, parks, and agencies to develop long-term ecological monitoring priorities for the entire corridor.

Mission

The Appalachian Trail Park Office fosters the Cooperative Management System of the Appalachian National Scenic Trail in order to preserve and provide for the enjoyment of the varied scenic, historic, natural and cultural qualities of the areas between the states of Maine and Georgia through which the Trail passes.

The Appalachian National Scenic Trail is administered primarily as a footpath in cooperation with the United States Forest Service and the 14 States encompassing the Trail, providing for maximum outdoor recreation potential as an extended trail and for the conservation and enjoyment of the nationally significant scenic, historic, natural, or cultural qualities of the areas through which the Trail passes. The Appalachian Trail is a way, continuous from Maine to Georgia, for travel on foot through the wild, scenic, wooded, pastoral, and culturally significant lands of the Appalachian Mountains.

Legislation

Document	Description
General Management Plan	In progress
Resource Management Plan	In progress
Enabling Legislation, 1968	"…trails so located as to provide for maximum outdoor recreation potential and for the conservation and enjoyment of the nationally significant scenic, historic, natural, or cultural qualities of the areas through which such trails may pass. National scenic trails may be located so as to represent desert, marsh, grassland, mountain, canyon, river, forest, and other areas, as well as landforms which exhibit significant characteristics of the physiographic regions of the Nation." • 1968: Public Law 90-543

Natural Resources

Air Quality

Because the Appalachian Trail traverses high elevations for much of its length, concerns about air quality typical of other parks are magnified for the Appalachian Trail. Because of human health concerns over extremely high ozone concentrations documented in the Great Smoky Mountains National Park (GRSM), three universities, in cooperation with NPS, have undertaken a study of lung function in hikers at high elevations at GRSM that will have similar application to hikers along the Appalachian Trail.

Fauna

There are five Federally-listed T & E animals in the Trail corridor.

Flora

At least 14 major forest types occur on the Appalachian Trail within the Appalachian Highlands. Lower elevations are dominated by oak and oak-pine forests with rich cove forest common in topographically sheltered areas. At higher elevations on the trail, northern hardwood species such as American beech, sugar maple, yellow buckeye and yellow birch become common. At the highest elevations, spruce-fir forest dominates, although much of the Fraser fir overstory has been eliminated by an introduced insect pest, the balsam wooly Adelgid. The trail also encompasses small unique habitats such as grassy balds, heath balds, mountain bogs, cliffs and rock outcrops, talus slopes and beech gaps. There are three Federally-listed endangered and threatened plants in the trail corridor.

Invasive Species

Because of the narrow corridor occupied by the Appalachian Trail, invasion by exotic plant species is a constant problem. At least 15 of the Trail's endangered species sites are threatened by invasive exotic plants.

The Appalachian Trail, in cooperation with the Southern Appalachian Man and the Biosphere Program, has undertaken a mapping and monitoring project for invasive exotic plants within the Appalachian Highlands Network.

Species of Special Concern

Most of the Trail's natural resource monitoring is carried out by volunteers, and the bulk of what has been done to date has focused on rare plant species.
Within the Trail corridor are populations of eight Federally-listed species:

- Carolina northern flying squirrel (*Glaucomys sabrinus coloratus*) – E
- Eastern cougar (*Felis concolor cougar*) (extirpated) - E
- Roan Mountain bluet (Houstonia (=Hedyotis) montana) – E
- Rock gnome lichen (*Gymnoderma lineare*) – E
- Shenandoah salamander (*Plethodon shenandoah*) - E
- Spreading avens (*Geum radiatum*) – E
- Spruce-fir moss spider (*Microhexura montivaga*) – E
- Virginia northern flying squirrel (*Glaucomys sabrinus fuscus*) - E

Nineteen globally rare community types have been identified to date on the Trail in the Appalachian Highlands Network, including red spruce/Fraser fir forest and Southern Appalachian mountain bogs as two of the most endangered ecosystems in the United States.

Unsustainable or Incompatible Uses

The Trail traverses many fragile, high-elevation communities. The challenge for trail managers is to provide a quality recreational experience for hikers, while minimizing damaging impacts to sensitive natural resources. Trail maintenance can also threaten rare species that grow immediately adjacent to the tread.

Water Resources

Maintaining waters in an unimpaired state represents a special challenge for the Appalachian Trail. Almost all sources of pollution are from offsite sources. Water quality is a major concern because long-distance hikers in remote areas of the Trail are dependent upon springs and creeks for their drinking water.

An inventory of the Trail's water resources is underway, and a water quality monitoring project is being developed.

Vital Signs and Related GPRA Goals			
Category (Level 1)	**Element (Level 2)**	**Vital Signs and Measures[1]**	**GPRA Goal[2]**
Air and Climate	Air Quality	Ozone, acidic deposition and stress, air contamination	None established

Vital Signs and Related GPRA Goals			
Category (Level 1)	**Element (Level 2)**	**Vital Signs and Measures[1]**	**GPRA Goal[2]**
	Weather and Climate	Air temperature, precipitation by type, relative humidity, total solar radiation, wind speed and direction, snow water equivalent and depth	None established
Water	Hydrology	Water depth and duration	None established
	Water Quality	Water chemistry, nutrient enrichment, contamination, aquatic macroinvertebrates	By September 30, 2005, ATPO will define and inventory its water resources.
Ecosystem Pattern and Process	Land Use/Land Cover	Monitor changes within and adjacent to park	None established
Biological Integrity	Species of Special Concern	Wetland and forest communities; forest vegetation; mammals, fish, and birds	By September 30, 2005, 8 (50%) of the 16 globally rare plant and animal species on ATPO land are being monitored and are in stable or improving condition.
	Exotic Plant Species	Early detection of exotic species	By September 30, 2005, the locations and estimated acreages of invasive exotic plant species will be identified on 500 miles of the A.T., with concentration given to finding and documenting exotic species within natural heritage sites along the Trail.
	T&E Species	Not a selected vital sign or measure	None established
Human Use	Visitor Usage	Identify and monitor impacts associated with increased visitation	None established
	Visitor Satisfaction	Not a selected vital sign or measure	By September 30, 2005, 98% of trail visitors are satisfied with trail conditions and appropriate trail facilities.
	Resource Knowledge	Not a selected vital sign or measure	By September 30, 2005, 14 (100%) of 14 natural heritage inventories of rare, threatened and endangered vascular plants and some animal classes will be completed within the A.T. corridor in the 14 A.T. states.

Notes:
[1] Vital signs and measures were identified by park staff, network staff, and cooperators to fulfill the objectives of the National Park Service Inventory and Monitoring program, and may not directly parallel the needs and/or requirements of any established GPRA goals.
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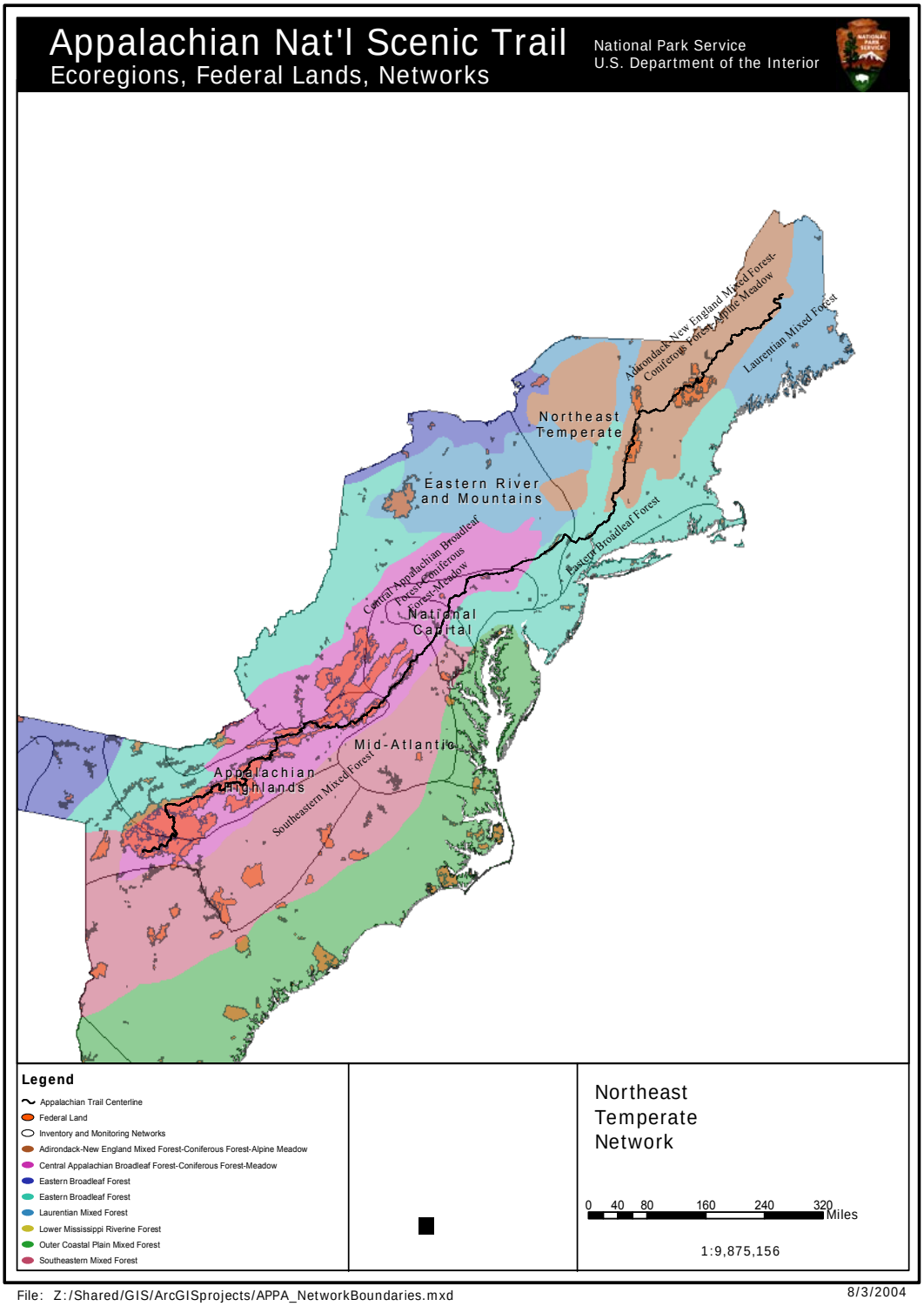

Figure B.2. Ecoregions and federal lands associated with the Appalachian Trail. The AT crosses 6 NPS units, 1 USFWS Refuge, 8 National Forests, and 67 state parks, forests and other lands.

Boston Harbor Islands, a National Park Area (BOHA) Boston, Massachusetts

Background

The Boston Harbor Islands became a unit of the National Park System in November 1996. The 34 islands (and former islands) of Boston Harbor, range in size from less than 1 acre to 214 acres and together encompass 1,600 acres of upland and another 1,500 acres of intertidal area throughout the harbor's 50 square miles. The Boston Harbor Islands are part of the only drumlin field in the United States that intersects a coastline. The islands have served numerous public and private uses and are a unique example of an island cluster intimately tied to the life of a city. Although within sight of a vibrant and densely populated city of Boston, Massachusetts, the islands offer the visitor a sense of isolation.

Located in the Northeastern Coastal Zone ecoregion at 42 degrees north latitude in Massachusetts Bay (part of the Gulf of Maine), the Boston Harbor Islands have a humid maritime climate characterized by a moderate annual range of temperatures and definite summer and winter seasons. The Massachusetts Bay was named an Estuary of National Significance in 1990, making programs to enhance the natural and scenic resources of the bay possible. The islands are located in a Class II Air Quality area, indicating that the state may permit a moderate amount of new air pollution as long as these increases do not exceed established baseline concentrations.

Despite massive human and natural alteration, the islands feature freshwater and saltwater marshes, dunes, numerous "heads" (the existing drumlins), ledges and cliffs, tidal flats and dense forest on larger islands, and nesting habitat as well as "haul out" habitat for marine bird and mammals. The flora and fauna of the islands reflect a long history of human use and alterations. Historically, the islands are thought to have been covered with mature forests of hemlock, maple, oak, pine, and hickory but presently, most of the islands are considered to be dominated by exotic, early successional vegetation.

Mission

The mission of the Boston Harbor Islands, a national park area, is to protect the islands as a resource of national significance and to make the island system an integral part of the life of the surrounding communities and region, while improving public knowledge and access for education, recreation, and tranquility within an urban area.

Legislation

Document	Description
General Management Plan, 2002	"…to preserve and protect a drumlin island system within Boston Harbor, along with associated natural, cultural, and historic resources; to tell the islands' individual stories and enhance public understanding and appreciation of the island system as a whole; and to provide public access, where appropriate, to the islands and surrounding waters for the education, enjoyment, and scientific and scholarly research of this and future generations."

Document	Description
Resource Management Plan	In progress
Enabling Legislation, 1996	"to provide education and visitor information programs to increase public understanding of and appreciation for the natural and cultural resources of the Boston Harbor Islands." • 1996: Public Law 104-333 • 1998: Public Law 105-355, Park legislation amended authorization to acquire, in partnership with other entities, a conservation easement at Thompson Island. • 2000: Public Law 106-176, technical corrections to park enabling legislation. The park's legislation is codified to Title 16, United States Code, Section 460 kkk: Boston Harbor Islands National Recreation Area.

Natural Resources

Intertidal habitat	Terrestrial habitat	Aquatic/wetland habitat	Resource Issues
• Tidal flat - 873 acres • Aquatic bed - 120 acres • Mussel reef - 87 acres • Rocky intertidal - 83 acres • Estuarine marsh - 82 acres	• Maritime shrub - 128 acres • Woodland, pioneer & mature - 110 ac. • Maritime forest - 72 acres • Scrubland - 23 acres • Old field - 11 acres • Cliffs - 8 acres	• Ponds - 23 acres • Vegetated wetlands - 8 acres • Springs/seeps	• Coastal erosion/sea level rise • Invasive exotic species • Boats • Atmospheric deposition/ozone • Water quality • Contamination • Visitor impacts • Feral animals • Climate change

Vital Signs and Related GPRA Goals			
Category (Level 1)	**Element (Level 2)**	**Vital Signs and Measures[1]**	**GPRA Goal[2]**
Air and Climate	Air Quality	Ozone, acidic deposition and stress, air contamination	None established
	Weather and Climate	Air temperature, precipitation by type, relative humidity, total solar radiation, wind speed and direction, snow water equivalent and depth	None established
Geology and Soils	Geomorphology	Intertidal substrate composition, shoreline change and sea level rise	None established
Water	Hydrology	Water depth and duration	None established
	Water Quality	Water chemistry, nutrient enrichment, contamination, aquatic macroinvertebrates	None established

Vital Signs and Related GPRA Goals			
Category (Level 1)	**Element (Level 2)**	**Vital Signs and Measures[1]**	**GPRA Goal[2]**
Ecosystem Pattern and Process	Land Use/Land Cover	Monitor changes within and adjacent to park	None established
	Extreme Disturbance	Harmful algal blooms	None established
Biological Integrity	Species of Special Concern	Intertidal, wetland, and forest communities; forest vegetation; mammals, and birds	None established
	Exotic Plant Species	Early detection of exotic species	None established
	T&E Species	Not a selected vital sign or measure	None established
Human Use	Visitor Usage	Identify and monitor impacts associated with increased visitation	None established
	Visitor Satisfaction	Not a selected vital sign or measure	Visitor Satisfaction: : By September 30, 2005, 95% of park visitors are satisfied with appropriate park facilities, services, and recreational opportunities.
	Consumptive Use	Intertidal harvesting	None established
	Resource Knowledge	Not a selected vital sign or measure	Sensitive habitats and species of special concern are identified on digitized maps for 30 park islands.

Notes:
[1] Vital signs and measures were identified by park staff, network staff, and cooperators to fulfill the objectives of the National Park Service Inventory and Monitoring program, and may not directly parallel the needs and/or requirements of any established GPRA goals.
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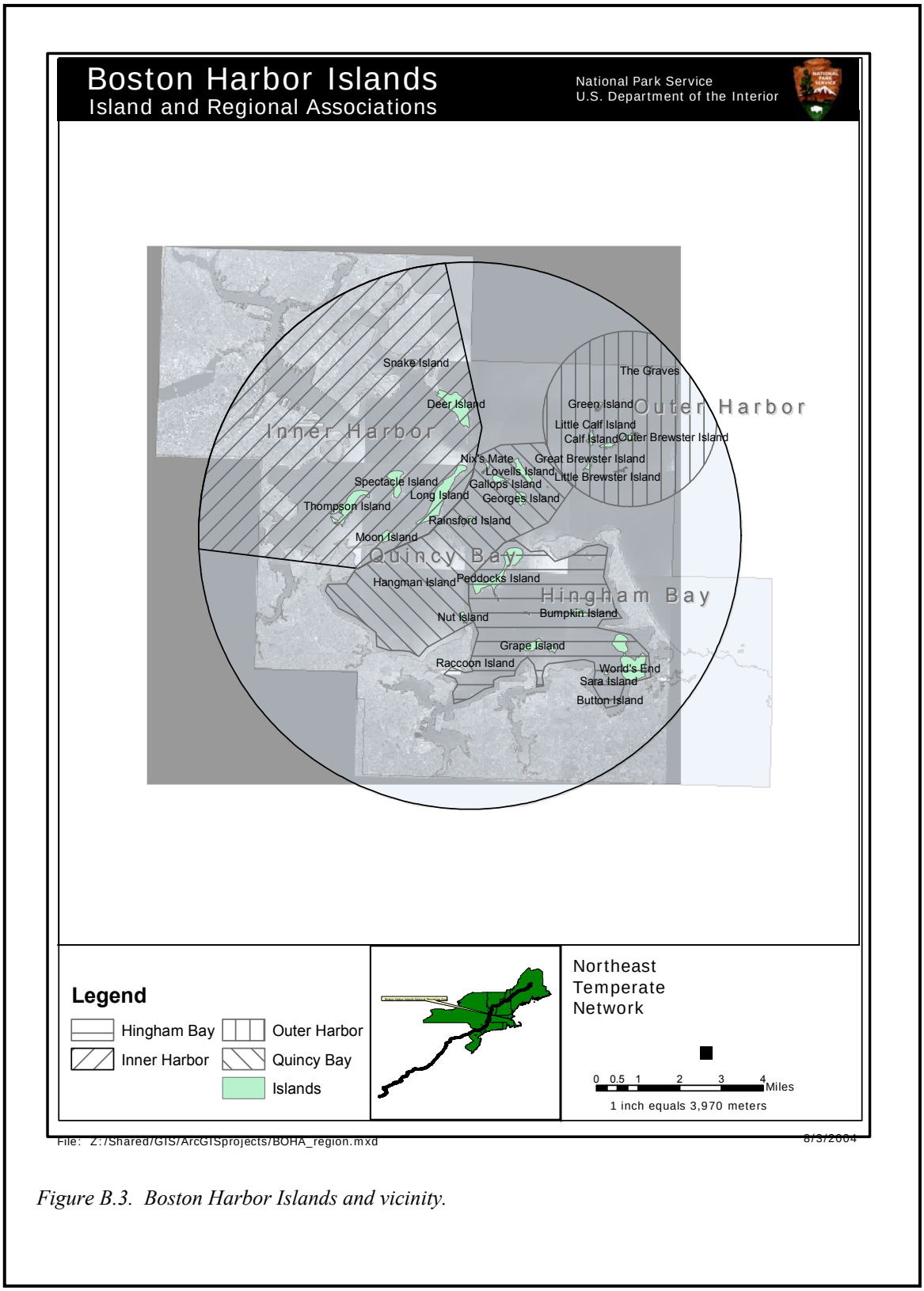

Figure B.3. Boston Harbor Islands and vicinity.

Marsh-Billings-Rockefeller National Historical Park (MABI) Woodstock, Vermont

Background

Marsh-Billings-Rockefeller NHP is the first unit of the National Park system to focus on the history of conservation and land stewardship in America. The park was gifted to the National Park Service by Laurence S. and Mary F. Rockefeller, established as a National Park in 1992, and opened to the public in June, 1998. The Park, named for George Perkins Marsh, one of the nation's first global environmental thinkers and author of "Man and Nature," is located in the Green Mountains of Central Vermont. The Park interprets the history of conservation with tours of the mansion and the surrounding 550-acre forest. The Park includes the Mt. Tom woodland, one of the earliest surviving examples of scientifically informed reforestation and forest management in the United States. The establishment of the Park directed that the tradition of professional forestry practiced on Mt. Tom for almost 125 years be continued by the National Park Service as an educational demonstration of forest stewardship and to preserve the cultural landscape.

Marsh-Billings-Rockefeller NHP is located in the Northeastern Highlands ecoregion and includes northern hardwoods, conifer plantations, cliff/rocky outcrop communities, open fields, streams, pond, vernal pools, and seeps. The mansion is a National Historic Landmark and the residential complex and farmland are part of a National Historic District.

The Park represents one of the earliest examples in New England of active reforestation efforts. Coniferous plantations of both native and non-native species were established beginning in the 1880s and presently comprise 26% of the Park's area. Reforestation also occurred in many areas of the forest as a result of agricultural abandonment, resulting in naturally regenerated northern hardwood, hemlock, and mixed forests. The Park's "patchy" forest mosaic reflects this history of alternate reforestation approaches and varied successional trajectories.

The Park includes a diversity of stand types as well as pronounced visual contrasts and view corridors created by open pastures and fields surrounded by dense forest plantations. Visitor experience of alternating openness and enclosure is further enhanced by the 14-mile system of 19th century carriage roads winding through the forest and over Mt. Tom.

Mission

Marsh-Billings-Rockefeller National Historical Park is the only national park to focus on conservation history and the evolving nature of land stewardship in America.

Legislation

Document	Description
General Management Plan, 1998	Marsh-Billings-Rockefeller NHP is a combination of a "cultural landscape with a high degree of historical integrity" that includes within its boundaries an "actively managed woodlands and a working farm that were historically part of a single estate." The park "reflects the continuity of more than a century of careful

Document	Description
	management "and is the "first unit of the national park system to focus on the history and evolution of conservation stewardship in America."
Resource Management Plan	In progress
Enabling Legislation, 1992	"…to interpret the history and evolution of conservation stewardship in America…" 1992: Public Law 102-350

Natural Resources

Terrestrial habitat	Aquatic/wetland habitat	Natural Resource Issues
• Hemlock no. hardwood forest - 171 acres • Northern hardwood forest - 80 acres • Hemlock forest - 62 acres • Native conifer plantations - 112 acres • Exotic conifer plantations - 40 acres • Maintained fields/pasture - 43 acres • Landscaped grounds - 9 acres • Cliffs - 1 acre	• The Pogue - 15 acre pond • Forested wetlands - 9 acres • Additional wetlands - 22 acres • Perennial stream, intermittent streams • Vernal pools • Springs/seeps	• Land management • Invasive exotic species • Atmospheric deposition/ozone • Water quality • Visitor impacts • External landuse/development • Deer, beaver • Climate change

Vital Signs and Related GPRA Goals			
Category (Level 1)	**Element (Level 2)**	**Vital Signs and Measures[1]**	**GPRA Goal[2]**
Air and Climate	Air Quality	acidic deposition and stress, air contamination	None established
	Weather and Climate	Air temperature, precipitation by type, relative humidity, total solar radiation, wind speed and direction, snow water equivalent and depth	None established
Geology and Soils	Geomorphology	stream geomorphology and lake morphometry	None established
Water	Hydrology	Water depth and duration	None established
	Water Quality	Water chemistry, nutrient enrichment, contamination, aquatic macroinvertebrates	None established
Ecosystem Pattern and Process	Land Use/Land Cover	Monitor changes within and adjacent to park	None established
Biological Integrity	Species of Special Concern	wetland, forest, and freshwater communities; forest vegetation; mammals, fish, and birds	None established
	Exotic Plant Species	Early detection of exotic species	None established

Vital Signs and Related GPRA Goals			
Category (Level 1)	**Element (Level 2)**	**Vital Signs and Measures[1]**	**GPRA Goal[2]**
	T&E Species	Not a selected vital sign or measure	None established
Human Use	Visitor Usage	Identify and monitor impacts associated with increased visitation	None established
	Visitor Satisfaction	Not a selected vital sign or measure	By September 30, 2005, 100% of park visitors are satisfied with appropriate park facilities, services, and recreational opportunities.
	Resource Knowledge	Not a selected vital sign or measure	By September30, 2005, 11 (92%) of 12 primary Marsh-Billings-Rockefeller NHP natural resource inventories are completed.

Notes:
[1] Vital signs and measures were identified by park staff, network staff, and cooperators to fulfill the objectives of the National Park Service Inventory and Monitoring program, and may not directly parallel the needs and/or requirements of any established GPRA goals.
2 GPRA Goals may not exist for all vital signs and/or measures, and not all GPRA Goals are identified on this list.

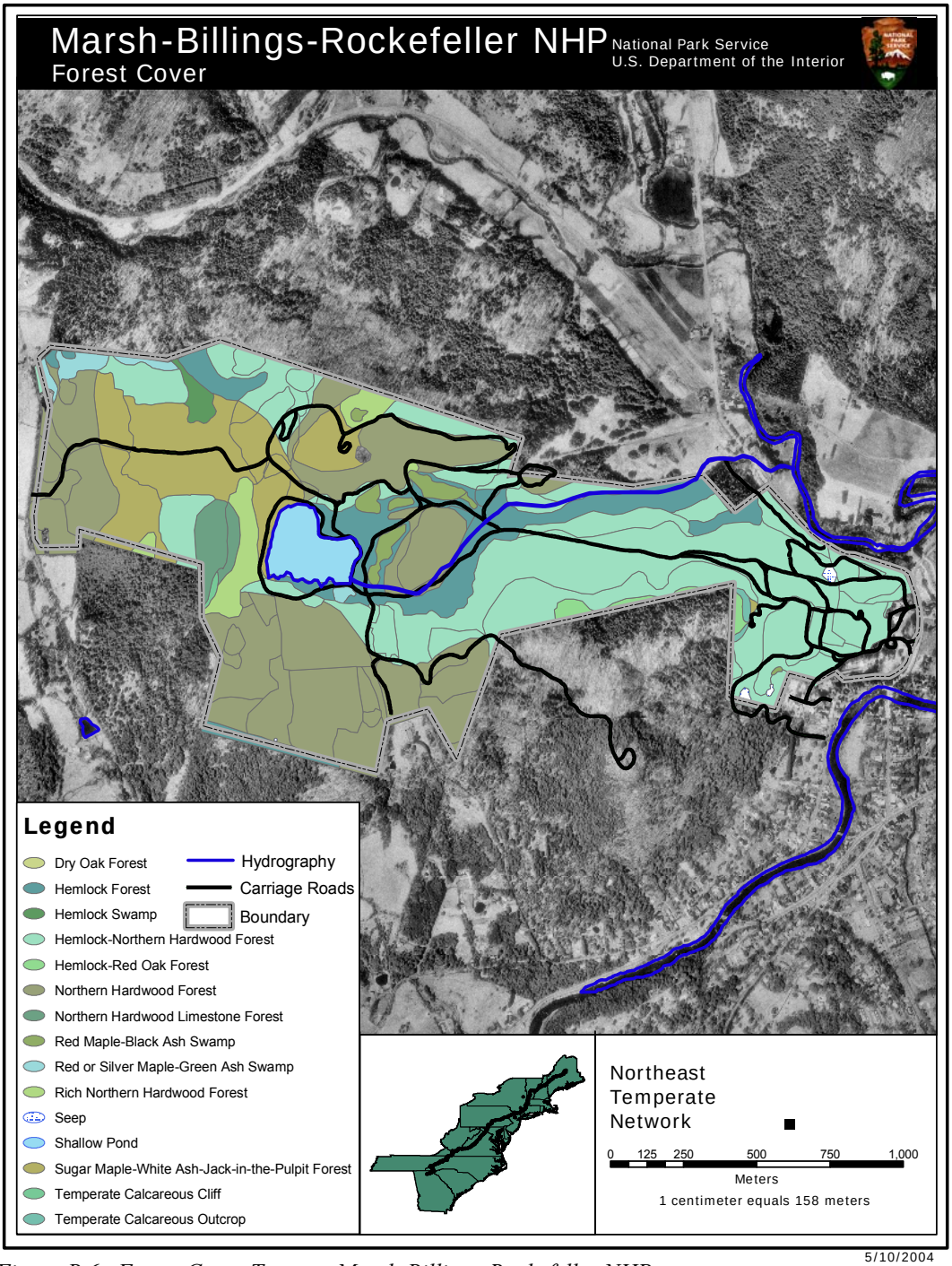

Figure B.6. Forest Cover Types at Marsh-Billings-Rockefeller NHP.

Minute Man National Historical Park (MIMA), Concord/Lexington, Massachusetts

Background

Minute Man NHP was established in 1959 to consolidate, preserve, and selectively restore and interpret portions of the Lexington-Concord Battle Road in Concord, Lincoln, and Lexington Massachusetts. The entire park is listed as a National Historic District on the National Register of Historic Places. The 750 acre park is comprised of 3 units (Battle Road, North Bridge, and Wayside units) where the opening battle of the American Revolution was initiated, and contains the site of "the shot heard around the world" at the North Bridge.

The Park, located in the Northeastern Coastal Zone ecoregion, is characterized by flat plains and low-rolling hills varying in elevation from 120' to 307' above sea level. The Park lies along the watershed boundaries of the Concord River flowing north, the Shawsheen River flowing south, and the Charles River flowing east. The primary resource management objectives of the Park are to preserve the cultural resources and reestablish the historic landscape. The cultural resources consist of 17 buildings, numerous monuments and archaeological sites, and the historic landscape consists of fields, forest, and wetlands. About one third of the park is wetlands, including forested wetland, shrub swamp, emergent wetlands, river/stream, ponds, vernal pools, and approximately one third is upland forests. Remaining lands include 150-200 acres agricultural lands (row crops, hay fields, orchards), meadow, lawn, structures, and roads and trails. Invasive exotic plants are a primary natural and cultural resource management concern due to their impacts on natural communities and cultural landscapes.

Mission

At Minute Man National Historical Park, the Battles of Lexington and Concord are brought to life through the preservation, restoration and interpretation of significant sites from "that famous day and year" when Colonists took up arms in defense of liberty and touched off the American Revolution.

Legislation

Document	Description
General Management Plan, 1989	"…ensure the protection of the park's significant cultural resources, provide better opportunities for visitor understanding of the events of the first day of the Revolutionary War-April 9, 1775, evoke the 1775 cultural landscape, and provide facilities needed fro visitors to appreciate the park's unique resources."
Resource Management Plan	A primary resource management objective is the reestablishment of the historic landscape. "The historic landscape within the park consist of fields, forest, wet lands and examples of local flora and fauna."
Enabling Legislation, 1959	"..to preserve for the benefit of the American people certain historic structures and properties of outstanding national significance associated with the opening of The War of the American Revolution, . . ." including "the road and road sites between Lexington and Concord…" 1959: Public Law 86-321

Natural Resources

Terrestrial habitat	Aquatic/wetland habitat	Natural Resource Issues
• Deciduous forest - 193 acres • Mixed & coniferous forest - 135 acres • Old fields - 153 acres • Agricultural fields - 104 acres • Cultural lands - 34 acres	• Forested wetlands - 150 acres • Shrub/open wetlands - 104 acres • Peatland - 4 acres • Ponds • Concord River, Elm Brook, Mill Brook • Vernal pools • Springs/seeps	• Invasive exotic species • Land management/agriculture • Visitor impacts • External land-use/development • Roads • Atmospheric deposition/ozone • Water quality • Deer, beaver, feral animals/pets • Climate change

Vital Signs and Related GPRA Goals			
Category (Level 1)	**Element (Level 2)**	**Vital Signs and Measures[1]**	**GPRA Goal[2]**
Air and Climate	Air Quality	Ozone, acidic deposition and stress, air contamination	None established
	Weather and Climate	Air temperature, precipitation by type, relative humidity, total solar radiation, wind speed and direction, snow water equivalent and depth	None established
Geology and Soils	Geomorphology	stream geomorphology	None established
Water	Hydrology	Water depth and duration	None established
	Water Quality	Water chemistry, nutrient enrichment, contamination, aquatic macroinvertebrates	Water Quality - By September 30, 2005, Minute Man NHP has unimpaired water quality.
Ecosystem Pattern and Process	Land Use/Land Cover	Monitor changes within and adjacent to park	None established
Biological Integrity	Species of Special Concern	Wetland and forest communities; forest vegetation; mammals, fish, and birds	None established
	Exotic Plant Species	Early detection of exotic species	By September 30, 2005, 16 (4.7%) of 337 acres of Minute Man NHPs lands impacted by exotic vegetation targeted by September 30, 1999, is contained.
	T&E Species	Not a selected vital sign or measure	None established
Human Use	Visitor Usage	Identify and monitor impacts associated with increased visitation	None established

Vital Signs and Related GPRA Goals			
Category (Level 1)	**Element (Level 2)**	**Vital Signs and Measures[1]**	**GPRA Goal[2]**
	Visitor Satisfaction	Not a selected vital sign or measure	Visitor Satisfaction - By September 30, 2005, 99% of all park visitors to Minute Man NHP are satisfied with appropriate park facilities, services, and recreational opportunities.
	Resource Knowledge	Not a selected vital sign or measure	None established

Notes:
[1] Vital signs and measures were identified by park staff, network staff, and cooperators to fulfill the objectives of the National Park Service Inventory and Monitoring program, and may not directly parallel the needs and/or requirements of any established GPRA goals.
2 GPRA Goals may not exist for all vital signs and/or measures, and not all GPRA Goals are identified on this list.

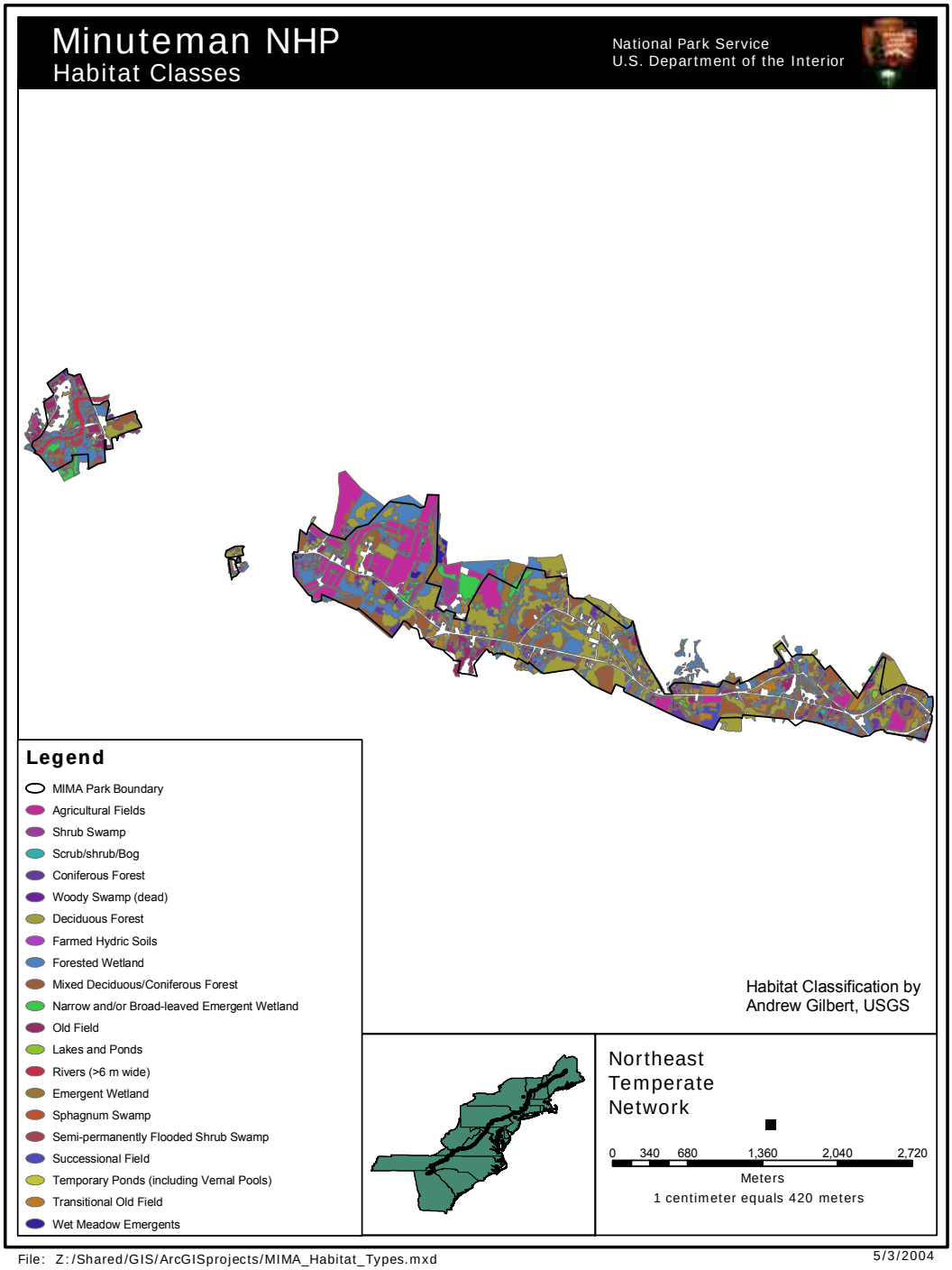

Fig. B. . Habitat Classes in Minuteman National Historic Park

Morristown National Historical Park (MORR) Morristown, New Jersey

Background

Morristown National Historic Park, the first national historic park, was established in 1933 to preserve the lands and resources associated with the winter encampments of the Continental Army during the War for Independence. Historical sites within the park include the historic Jacob Ford Mansion (General Washington's military headquarters during the winter of 1779-1780); the Upper Redoubt site (built in 1777 following the battles of Princeton and Trenton) in the Fort Nonsense Unit of the park; the historic Wick House & Farm (headquarters of General Arthur St. Clair); the 18th century Guerin house (home of local farmer, Joshua Guerin).

Morristown NHP is located on the border between the Northeastern Highlands and the Northern Piedmont ecoregions and is comprised of 1,685 acres distributed across 4 geographically separate units. Washington's Headquarters occupies 10 acres, the Fort Nonsense Unit occupies 35 acres, the Jockey Hollow Encampment, the largest unit, occupies 1,320 acres, and the New Jersey Brigade Unit occupies 321 acres. Vegetation is dominated by a mix of mowed fields, orchards, planted gardens, and forest stands. Changing land use patterns have dramatically altered the character of the local area from farmed or hardwood forested areas intersected by streams to low density residential development, expanding networks of roads, commercial development and recreational development. More than half a million visitors use the park in a year.

Mission

To protect the landscape and historic resources of the Continental Army's winter encampments and other nearby Revolutionary War military and civilian sites for the benefit and inspiration of all. To interpret the extraordinary fortitude of the officers and enlisted men under Washington's leadership and the important subsequent commemoration of these crucial events of the American Revolution.

Legislation

Document	Description
General Management Plan, 2003	The new GMP addresses many issues, including protection of museum collections, sustainable management of park forests, direct management of the park's cultural landscape, and support the enhanced interpretation of the historical aspects of the park.
Resource Management Plan, 2003	"The park's landscapes will be maintained through management of plant and animal communities." Actively managed sites include mowed fields, orchards, and planted gardens. Passively managed sites include a variety of forested stands, including successional and mature stands. There are a variety of mammals, fish, and birds present, in addition to aquatic resources.
Enabling Legislation, 1933	To commemorate the sight that General George Washington used as a winter encampment in 1779-1780 and gain "title to all the lands, structures, and other property in the military campground areas…" • 1933: Public Law 72-409

Document	Description
	• March 2, 1933: Public Law 72-409, 47 Stat. 1421, establishes Morristown National Historical Park, the first NHP, 1051.38 acres authorized. Land includes Jockey Hollow, Ft. Nonsense, and Washington's Headquarters. Washington Association of New Jersey named advisor to park. Museum collection highlighted. • Sept. 18, 1964: Public Law 88-601, authorized the addition of 281 acres by donation, purchase or otherwise. 259.71 acquired. • Public Law 93-477 authorized 465 acres, 466.98 acquired. • Public Law 94-578 authorized 600 acres, 593.44 acquired. • Public Law 102-118 authorized 615 acres, 606.44 acquired. • Public Law 105-355 authorized 15 acres of Warren property in addition to the earlier 615 acres authorized.

Natural Resources

Terrestrial habitat	Aquatic/wetland habitat	Natural Resource Issues
• Mixed oak forest - 565 acres • Mixed successional forest - 476 acres • Mixed hardwood forest - 109 acres • Fields - 60 acres	• Wetlands - 22 acres • Rivers, streams • Cat Swamp Pond (artificial) • Springs/seeps	• Invasive exotic species • Deer, feral animals/pets • External land-use/development • Roads • Atmospheric deposition/ozone • Water quality • Land management • Visitor impacts • Climate change

Vital Signs and Related GPRA Goals			
Category (Level 1)	**Element (Level 2)**	**Vital Signs and Measures[1]**	**GPRA Goal[2]**
Air and Climate	Air Quality	Ozone, acidic deposition and stress, air contamination	None established
	Weather and Climate	Air temperature, precipitation by type, relative humidity, total solar radiation, wind speed and direction, snow water equivalent and depth	None established
Geology and Soils	Geomorphology	stream geomorphology	None established
Water	Hydrology	Water depth and duration	None established
	Water Quality	Water chemistry, nutrient enrichment, contamination, aquatic macroinvertebrates	By September 30, 2005, Morristown NHP has unimpaired water quality.
Ecosystem Pattern and Process	Land Use/Land Cover	Monitor changes within and adjacent to park	None established

Vital Signs and Related GPRA Goals			
Category (Level 1)	**Element (Level 2)**	**Vital Signs and Measures[1]**	**GPRA Goal[2]**
Biological Integrity	Species of Special Concern	Wetland and forest communities; forest vegetation; mammals, fish, and birds	None established
	Exotic Plant Species	Early detection of exotic species	By September 30, 2005, 15 (7%) of 220 acres of Morristown NHP lands impacted by exotic vegetation targeted by September 30, 1999, are contained.
	T&E Species	Not a selected vital sign or measure	None established
Human Use	Visitor Usage	Identify and monitor impacts associated with increased visitation	None established
	Visitor Satisfaction	Not a selected vital sign or measure	By September 30, 2005, 98% of park visitors at Morristown NHP are satisfied with appropriate park facilities, services, and recreational opportunities
	Resource Knowledge	Not a selected vital sign or measure	By September 30, 2005, 5 (50%) of 10 primary Morristown NHP natural resource inventories identified in a Resource Management Plan and General Management Plan are completed.

Notes:
[1] Vital signs and measures were identified by park staff, network staff, and cooperators to fulfill the objectives of the National Park Service Inventory and Monitoring program, and may not directly parallel the needs and/or requirements of any established GPRA goals.
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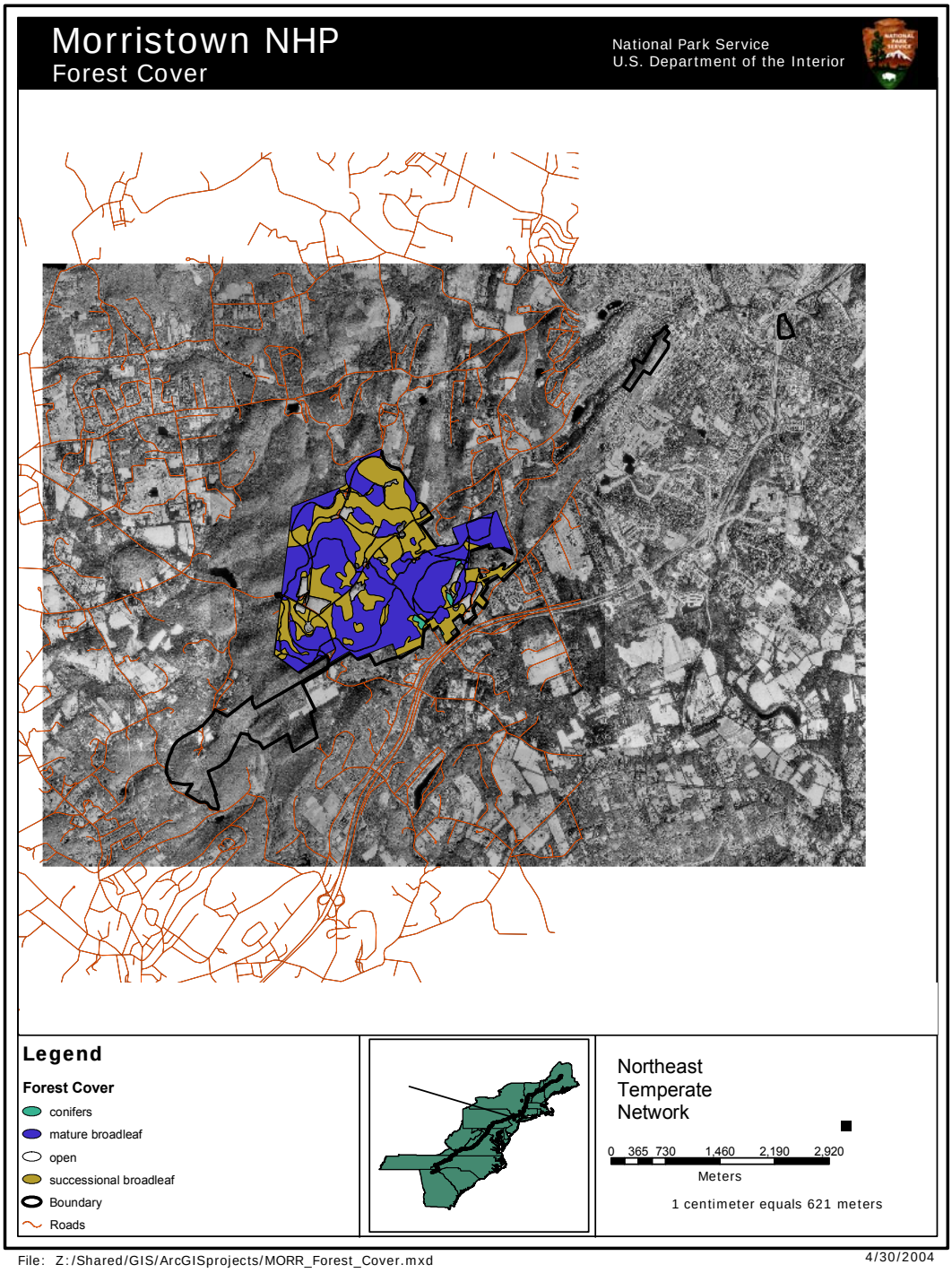

Figure A.10. Forest Cover and roads in Morristown NHP boundary (Fort Nonsense Unit not shown)

Roosevelt-Vanderbilt National Historical Sites (ROVA) Hyde Park, New York

Background

Roosevelt-Vanderbilt National Historic Sites consists of three sites in Hyde Park, New York, totaling 682 acres (Eleanor Roosevelt Mansion, Home of Franklin D. Roosevelt, and the Vanderbilt Mansion). The sites are within three miles of each other, in western Dutchess County, and host about 500,000 visitors per year.

The Roosevelt-Vanderbilt National Historic Sites host a broad array of natural resources located in the Eastern Great Lakes and Hudson Lowlands ecoregion. Both the Home of Franklin D. Roosevelt NHS and Vanderbilt Mansion NHS border on the Hudson River, a brackish-water estuary until it reaches a dam at Troy, New York 75 miles to the north. The presence of the river brings a marine influence far inland, resulting in unique plant communities and animal species otherwise uncommon to the region.

The lands are primarily (55%) forested and include nearly 30% wetlands (open water, Hudson River and freshwater tidal marshes). A 25-acre tidal marsh lies between the Home of Franklin D. Roosevelt NHS and the Hudson River, and a dam built by the Roosevelt family in 1925 across the Fall-Kill Creek created an extensive wetlands complex at the Eleanor Roosevelt NHS. In addition, the parks contain approximately 4.4 miles of streams, 14-acres of permanent ponds, 40-acres of non-tidal wetlands, numerous unmapped vernal pools and intermittent streams, mature second-growth hardwood forests, numerous rock outcrops, a sphagnum swamp, and a wet sedge meadow. Regionally significant amphibian, reptile, and plant populations are found in the parks, including State Threatened Blanding's turtle (*Emydoidea blandingii*) and a rare northern population of prickly pear cactus (*Opuntia humiifusa*). Significant threats from exotic species are affecting natural and cultural landscapes, especially Japanese barberry, Japanese knotweed, garlic mustard, tree-of heaven, and black locust.

Mission

General

- ". . . explain the significance of these wealthy Americans and the era they represent in the economic, sociological, and cultural history of the United States . . ."
- ". . . to let present and future generations know what mansion-living was like . . ."
- ". . . to illustrate a phase of man's relationship with his environment."
-

Eleanor Roosevelt Mansion

Commemorate the life of an outstanding woman in American history and her work on issues and humanitarian concerns to which she devoted her considerable intellect by preserving the site from which she drew much of her inspiration.

Home of Franklin D. Roosevelt

Preserve the estate and memorial gravesite of the only four term President of the United States and one of the pivotal figures of the 20th Century.

Vanderbilt Mansion

Preserve the estate of Frederick W. Vanderbilt which is representative and illustrative of the Gilded Age and significant in the economic, sociological and cultural history of the United States.

Legislation

Document	Description
General Management Plan	In progress
Resource Management Plan, 1999	"…the preservation of natural resources, cultural landscapes, and maintained viewsheds," are goals of the RMP. The site is bordered by the Hudson River, and has an extensive wetlands complex (home of the State-threatened Blanding's Turtle), seasonal and permanent woodlands ponds, second-growth hardwood forests, rock outcrops, a sphagnum swamp, and wet sedge meadow.
Enabling Legislation	**Eleanor Roosevelt Mansion:** • 1977: Public Law 95-32, establishing Eleanor Roosevelt National Historic Site. • 1998: Authorizes the acquisition of property within the historic Roosevelt lands to be acquired by means other than donation and administered as a part of the Home of FDR or Eleanor Roosevelt National Historic Site. **Home of Franklin D. Roosevelt:** • 1939: Congressional Resolution establishing President Roosevelt's intent to donate his residence to the United States upon his death. • 1944: Federal Register Notice of Secretary of the Interior Harold Ickes designating the Franklin D. Roosevelt Home a National Historic Site. • 1975: Authorized the acquisition of any lands contiguous to the Roosevelt estate to be acquired by donation. • 1998: Authorizes the acquisition of property within the historic Roosevelt lands to be acquired by means other than donation and administered as a part of the Home of FDR or Eleanor Roosevelt National Historic Site. • 1999: Authorized the transfer of administrative jurisdiction of up to one acre from the NPS to the National Archives and Records Administration for the purpose of building a joint visitor center **Vanderbilt Mansion:** • 1940: Designation Order establishes the Vanderbilt Mansion National Historic Site as a monument to the Gilded Age.

Natural Resources

Terrestrial habitat	Aquatic/wetland habitat	Natural Resource Issues
• Hemlock no. hardwood - 191 acres • Northern hardwood forest - 168 acres • Successional forest/old field - 74	• Tidal marsh - 25 acres • Palustrine wetlands - 40 acres • Ponds and reservoirs -15 acres • Fall Kill, Meriches Kill, Crum Elbow Creek	• Atmospheric deposition/ozone • Water quality • Contamination • External land-

Terrestrial habitat	Aquatic/wetland habitat	Natural Resource Issues
acres • Conifer plantation - 29 acres • Mowed/landscaped - 124 acres • Agricultural fields - 21 acres	• Streams • Vernal pools • Springs/seeps	use/development • Roads • Land management • Visitor impacts • Deer, beaver, feral animals/pets • Invasive exotic species • Climate change

Vital Signs and Related GPRA Goals			
Category (Level 1)	**Element (Level 2)**	**Vital Signs and Measures[1]**	**GPRA Goal[2]**
Air and Climate	Air Quality	Ozone, acidic deposition and stress, air contamination	None established
	Weather and Climate	Air temperature, precipitation by type, relative humidity, total solar radiation, wind speed and direction, snow water equivalent and depth	None established
Geology and Soils	Geomorphology	stream geomorphology	None established
Water	Hydrology	Water depth and duration	None established
	Water Quality	Water chemistry, nutrient enrichment, contamination, aquatic macroinvertebrates	By September 30, 2005, Roosevelt-Vanderbilt National Historic Sites have unimpaired water quality.
Ecosystem Pattern and Process	Land Use/Land Cover	Monitor changes within and adjacent to park	None established
Biological Integrity	Species of Special Concern	Wetland and forest communities; forest vegetation; mammals, fish, and birds	By September 30, 2005, 21 of 23 (90%) of Roosevelt-Vanderbilt National Historic Site's populations of plant and/or animal species of special concern are at scientifically acceptable levels.
	Exotic Plant Species	Early detection of exotic species	By September 30, 2005, exotic vegetation (Black Locust, barberry, ailanthus and other alien vegetation species) on 75 (67%) of 111 targeted acres of park land is contained.
	T&E Species	Not a selected vital sign or measure	None established
Human Use	Visitor Usage	Identify and monitor impacts associated with increased visitation	None established

Vital Signs and Related GPRA Goals			
Category (Level 1)	**Element (Level 2)**	**Vital Signs and Measures[1]**	**GPRA Goal[2]**
	Visitor Satisfaction	Not a selected vital sign or measure	By September 30, 2005, at Eleanor Roosevelt NHS, 95 percent of visitors will be satisfied with appropriate park facilities, services and recreational opportunities. By September 30, 2005, at Home of FDR, 95 percent of visitors will be satisfied with appropriate park facilities, services and recreational opportunities. By September 30, 2005, At Vanderbilt Mansion, 95% of visitors will be satisfied with appropriate park facilities, services and recreational opportunities.
	Resource Knowledge	Not a selected vital sign or measure	None established

Notes:
[1] Vital signs and measures were identified by park staff, network staff, and cooperators to fulfill the objectives of the National Park Service Inventory and Monitoring program, and may not directly parallel the needs and/or requirements of any established GPRA goals.
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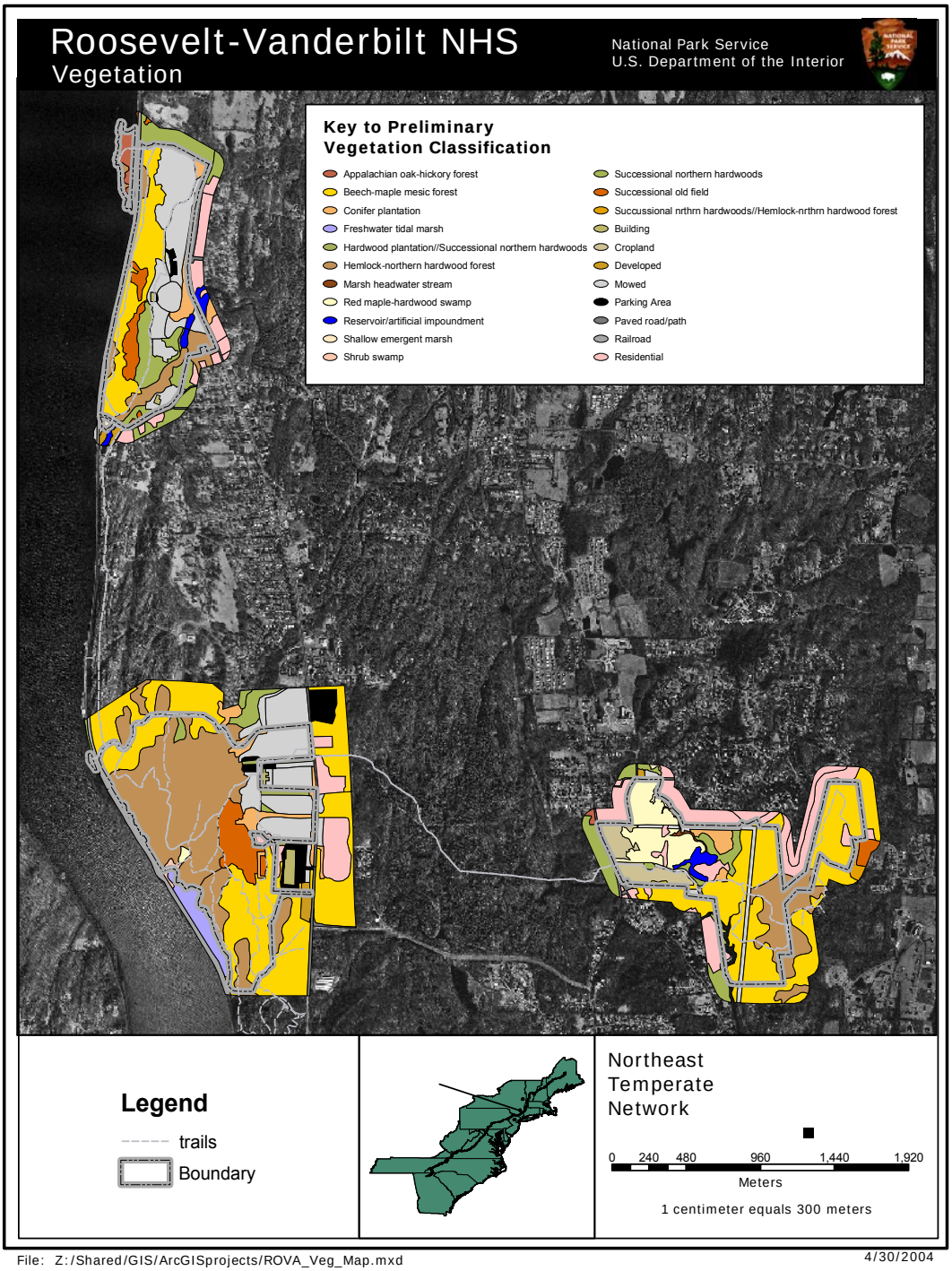

Figure A.12. Vegetation at Roosevelt-Vanderbilt NHS.

Saint-Gaudens National Historic Site (SAGA) Cornish, New Hampshire

Background

Saint-Gaudens National Historic Site consists of 148-acres that include the home, gardens and studios of Augustus Saint-Gaudens (1848-1907), one of America's foremost sculptors. This was his summer residence from 1885-1897, and his permanent home from 1900 until his death in 1907. During this time, Saint-Gaudens lived and worked as an artist in the Cornish Colony from 1885 to 1907. Saint-Gaudens National Historic Site was formally established in 1964.
The park occurs within the Northeastern Highlands ecoregion. This region is primarily dominated by hemlock and hemlock-beech transitional forest with pockets of semi-rich to rich mesic forest. The park borders a strip of rich sugar maple-ash-oak-hickory forest on river terrace slopes that were formed from lake-bottom sediments of the former glacial Lake Hitchcock along the Connecticut River Valley. Much of the site's 150 acres is on the lower slopes next to the river bottom and is covered with a coniferous and mixed deciduous forest (Gilman, 1997).

Natural resource inventories in 1980, 1986 and 1994 documented many vascular plant and vertebrate species, except birds. A long-term USFS forest health monitoring program station operates in the park. The park is experiencing a decline in white ash and near extirpation of butternut, and Hemlock Woolly Adelgid poses a potential threat to forest resources. Proliferation of purple loosestrife and potential introduction of other exotics are management concerns for the park's wetlands. The park supports a diverse amphibian and reptile community, and is developing long-term monitoring protocols and vernal pool protection strategies.

Significant resources inside the park boundaries include Blow-Me-Down Brook, Blow-Me-Up Brook, Blow-Me-Down Pond, wetlands surrounding Blow-Me-Down Pond, and a farm Pond. Roughly half of the park is bordered by stream and pond habitats. Blow-Me-Up Brook winds along the northern edge of the property through steep ravines before it merges with the larger Blow-Me-Down Brook which then flows into Blow-Me-Down Pond. Both Blow-Me-Down Pond and the farm pond are manmade and have control structures at their outlets. Blow-Me-Down Pond is 5-acre body of water with maximum depths of 7 – 8 feet by the dam, and an average depth of approximately 3.8 ft.

Mission

Preserve, protect, and interpret historically significant properties associated with the life and cultural achievements of Augustus Saint-Gaudens (1848-1907), the foremost American sculptor of the late 19th and early 20th centuries. In order that the Saint-Gaudens NHS may achieve more effectively its purpose as a living memorial, the park is directed to promote the arts through events in the spirit of those conducted by Augustus Saint-Gaudens and the Saint-Gaudens Memorial. Saint-Gaudens National Historic Site also commemorates the "Cornish Art Colony," a community of approximately sixty visual and performing artists, writers and patrons which surrounded Saint-Gaudens and continued after his death until the early 1930's.

Legislation

Document	Description
General Management Plan, 1995	Saint-Gaudens NHS contains the home and studios of one of American's foremost sculptors. Preservation of the art, house, and studios is a top priority. Furthermore, "the gardens and landscape have special significance in their own right, having survived nearly intact from the first quarter of the century".
Resource Management Plan	The site contains woodlands, meadows, a pond, stream, and formal gardens. The maintenance of these areas in preserving their historical and aesthetic value are goals of the RMP.
Enabling Legislation, 1964	"In order to preserve in public ownership historically significant properties associated with the life and cultural achievements of Augustus Saint-Gaudens" from "the sites and structures comprising the Saint-Gaudens Memorial…" 1964: Public Law 88-543

Natural Resources

Terrestrial habitat	Aquatic/wetland habitat	Natural Resource Issues
• Mixed forest - 104 acres • Fields - 16 acres • Landscaped - 5 acres	• Wetlands - 18 acres • Blow-me-down Pond - 5 acres • Blow-me-down, Blow-me-up Brooks • Vernal pools • Springs/seeps	• Atmospheric deposition/ozone • Water quality • External land-use/development • Roads • Visitor impacts • Land management • Deer, feral animals/pets • Invasive exotic species • Climate change

Vital Signs and Related GPRA Goals			
Category (Level 1)	**Element (Level 2)**	**Vital Signs and Measures[1]**	**GPRA Goal[2]**
Air and Climate	Air Quality	Acidic deposition and stress, air contamination	None established
	Weather and Climate	Air temperature, precipitation by type, relative humidity, total solar radiation, wind speed and direction, snow water equivalent and depth	None established
Geology and Soils	Geomorphology	stream geomorphology	None established
Water	Hydrology	Water depth and duration	None established
	Water Quality	Water chemistry, nutrient enrichment, contamination, aquatic macroinvertebrates	By September 30, 2005, Saint-Gaudens NHS has unimpaired water quality.

Vital Signs and Related GPRA Goals			
Category (Level 1)	**Element (Level 2)**	**Vital Signs and Measures[1]**	**GPRA Goal[2]**
Ecosystem Pattern and Process	Land Use/Land Cover	Monitor changes within and adjacent to park	None established
Biological Integrity	Species of Special Concern	wetland and forest communities; forest vegetation; mammals, fish, and birds	None established
	Exotic Plant Species	Early detection of exotic species	By September 30, 2005, exotic vegetation [purple loosestrife and other alien vegetation species] on 8 of 125 targeted acres (6.5%)of parkland in Saint-Gaudens NHS are contained.
	T&E Species	Not a selected vital sign or measure	None established
Human Use	Visitor Usage	Identify and monitor impacts associated with increased visitation	None established
	Visitor Satisfaction	Not a selected vital sign or measure	By September 30, 2005, 85% of visitors to Saint-Gaudens NHS are satisfied with appropriate facilities, services, and recreational opportunities.
	Resource Knowledge	Not a selected vital sign or measure	By September 30, 2005, Saint-Gaudens NHS will have acquired 80% of the outstanding 10 of 12 data sets as called for in the NPS Inventory & Monitoring program.

Notes:
[1] Vital signs and measures were identified by park staff, network staff, and cooperators to fulfill the objectives of the National Park Service Inventory and Monitoring program, and may not directly parallel the needs and/or requirements of any established GPRA goals.
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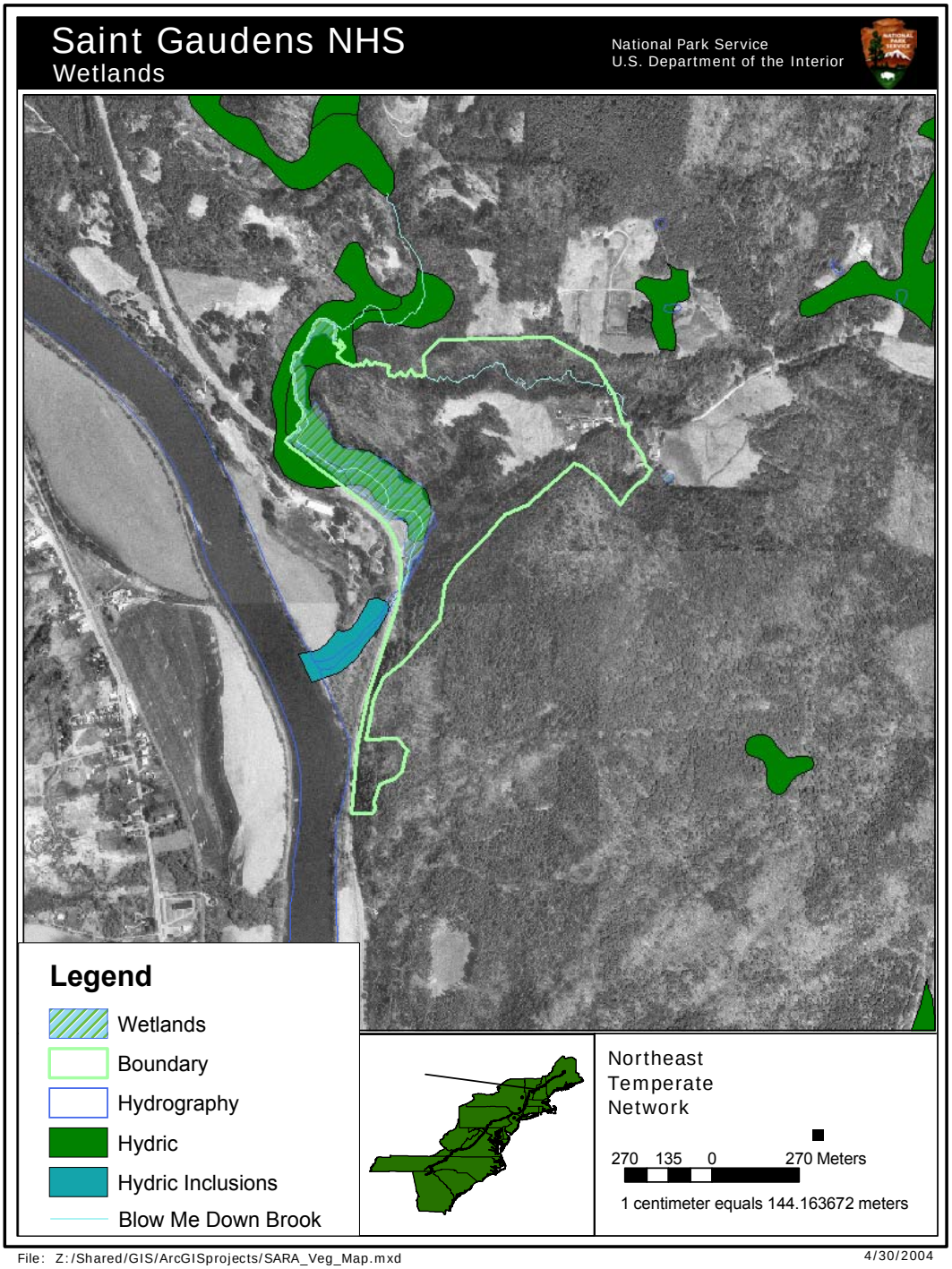

Figure A.15. Wetlands at Saint Gaudens NHP.

Saratoga National Historical Park (SARA) Schuylerville, New York

Background

Saratoga National Historic Park was established in 1938 to commemorate the first significant American military victory during the Revolution. The Battles of Saratoga are considered by some to rank among the fifteen most decisive battles in world history. Here in 1777 American forces met, defeated and forced a major British army to surrender, an event which led France to recognize the independence of the United States and enter the war as a decisive military ally of the struggling American forces.

Saratoga National Historical Park preserves and protects the battlefield and the sites associated with the 1777 surrender of British forces at Saratoga, which was a decisive event in the winning of American independence, and interprets these and other sites, events, and people related to the military campaigns in the Champlain-Hudson and Mohawk valleys.

The Park, located in the Eastern Great Lakes and Hudson Lowlands, comprises three separate units: the 4 square mile Battlefield in Stillwater, New York; the General Philip Schuyler House eight miles north of the battlefield in Schuylerville, New York; and, the Saratoga Monument in the nearby village of Victory. Saratoga is near the southern extent of the Adirondack Mountain region and is characterized by cool summers and relatively long cold winters. Snow often covers the ground from November through March.

The majority of the park consists of the Battlefield Unit which lies on rolling hills rising from the alluvial floodplain along the Hudson River. Elevations range from 26 m above sea level along the river to 124 m at the top of Fraser Hill. Numerous glacial ridges and ravines drain east into the Hudson River. A relatively low but steep escarpment marks the boundary between the hills and the alluvial floodplain of the Hudson River. Forests cover the largest percentage of park lands, comprising 2145 acres. Grasslands comprise 800 acres of the park and are dominated by grasses and forbs and contain the largest number of species in the park. The grasslands are maintained through prescribed fire and mowing. Brush/shrub areas (416 acres) and wetlands (45acres) make up the rest of the park landscape. The Hudson River floodplain, streams and wet meadows support unique habitats within and around the park. State listed threatened or special concern species found within the park include: two sedges; an iris (blue-eyed grass); running pine; and, woodland agrimony. Wildlife species typical for the region include the white-tailed deer, eastern coyote, eastern wild turkey, eastern meadowlark, northern harrier, snapping turtle, American toad, and meadow vole. Of the wildlife species known to utilize the park, 23 bird species are either federally or state listed as endangered, threatened, or of special concern. Vegetation plays a prominent role in the interpretation of the park. The historic configuration of the fields and forests at Saratoga was important in the overall battle strategy of 1777. The sequence of the park's land acquisition and land use history has produced a mosaic of old field, shrub, and forest communities.

Mission

Saratoga National Historical Park was established to preserve and protect the battlefield and sites associated with the 1777 surrender of British forces at Saratoga during the American Revolution, and to interpret the sites and events related to the military campaigns in the northern theater of operations from 1775 to 1777.

Legislation

Document	Description
General Management Plan, 2003	The goals of the GMP are to protect, preserve, and maintain the cultural and natural resources associated with the battles, siege, and surrender of 1777 at Saratoga. Furthermore, protect the natural resources "in the context of a cultural park to foster healthy ecosystems." Lastly, help the public understand the sacred and commemorative nature of the park's landscape and the significance of the military events that occurred at the site and how they impacted the outcome of the American Revolution.
Resource Management Plan, 1992	"The vegetation of the historic/cultural landscape is the Park's primary natural feature." During the battles of Saratoga the topography and vegetation played an important role. An awareness of this and an effort to restore the native vegetation is a primary goal.
Enabling Legislation, 1938	Saratoga was designated as a National Historic Park in 1938 to commemorate the battle, siege, and surrender of Saratoga in 1777. This battle is ranked among the top fifteen battles in world history and helped in the winning of American Independence • 1938: Public Law 576 authorizes Saratoga National Historical Park, incorporating the existing New York State Battlefield.. • June 22, 1948: Public Law 734 establishes Saratoga National Historical Park, with a limit of 5,500 acres. The Secretary of the Interior is authorized to accept all or any portion of the Philip Schuyler estate property, real or personal, in Schuylerville, NY, which occurs on March 30, 1950. • January 12, 1983: Public Law 97-460 establishes a permanent legislative park boundary enclosing 3406 acres. Saratoga Monument and Victory Woods are incorporated into park.

Natural Resources

Terrestrial habitat	Aquatic/wetland habitat	Natural Resource Issues
• Hemlock no. hardwood forest - 1067 ac. • Northern hardwood forest - 83 acres • Successional no. hardwood - 593 acres • Successional shrubland - 90 acres • Old field - 310 acres • Agricultural fields - 508 acres • Landscaped - 13 acres	• Wetlands - 175 acres • 4 Streams, Champlain Canal • 2 Ponds (artificial) • Springs/seeps	• Atmospheric deposition/ozone • Water quality • Contamination • Hydrologic alteration • External land-use/development • Roads • Land management • Visitor impacts • Deer, beaver, feral animals/pets

Terrestrial habitat	Aquatic/wetland habitat	Natural Resource Issues
		• Invasive exotic species • Climate change

Vital Signs and Related GPRA Goals			
Category (Level 1)	**Element (Level 2)**	**Vital Signs and Measures[1]**	**GPRA Goal[2]**
Air and Climate	Air Quality	Ozone, acidic deposition and stress, air contamination	None established
	Weather and Climate	Air temperature, precipitation by type, relative humidity, total solar radiation, wind speed and direction, snow water equivalent and depth	None established
Geology and Soils	Geomorphology	morphometry	None established
Water	Hydrology	Water depth and duration	None established
	Water Quality	Water chemistry, nutrient enrichment, contamination, aquatic macroinvertebrates	By September 30, 2005, Saratoga NHP has unimpaired water quality.
Ecosystem Pattern and Process	Land Use/Land Cover	Monitor changes within and adjacent to park	None established
	Restoring Formerly Developed Lands		Restoring Formerly Developed Lands: By September 30, 2005, 10.1% of targeted parklands, disturbed by development or agriculture, as of 1999 (22,500 of 222,300 acres), are restored.
Biological Integrity	Species of Special Concern	Wetland and forest communities; forest vegetation; mammals, fish, and birds	None established
	Exotic Plant Species	Early detection of exotic species	By September 30, 2005, exotic vegetation on 1% of targeted acres of parkland is contained (10 of 800 Acres).
	T&E Species	Not a selected vital sign or measure	None established
Human Use	Visitor Usage	Identify and monitor impacts associated with increased visitation	None established
	Visitor Satisfaction	Not a selected vital sign or measure	By September 30, 2005, 96% of Saratoga NHP's visitors are satisfied with the appropriate park facilities, services and recreational opportunities.
	Resource Knowledge	Not a selected vital sign or measure	None established

Notes:
[1] Vital signs and measures were identified by park staff, network staff, and cooperators to fulfill the objectives of the National Park Service Inventory and Monitoring program, and may not directly parallel the needs and/or requirements of any established GPRA goals.
2 GPRA Goals may not exist for all vital signs and/or measures, and not all GPRA Goals are identified on this list.

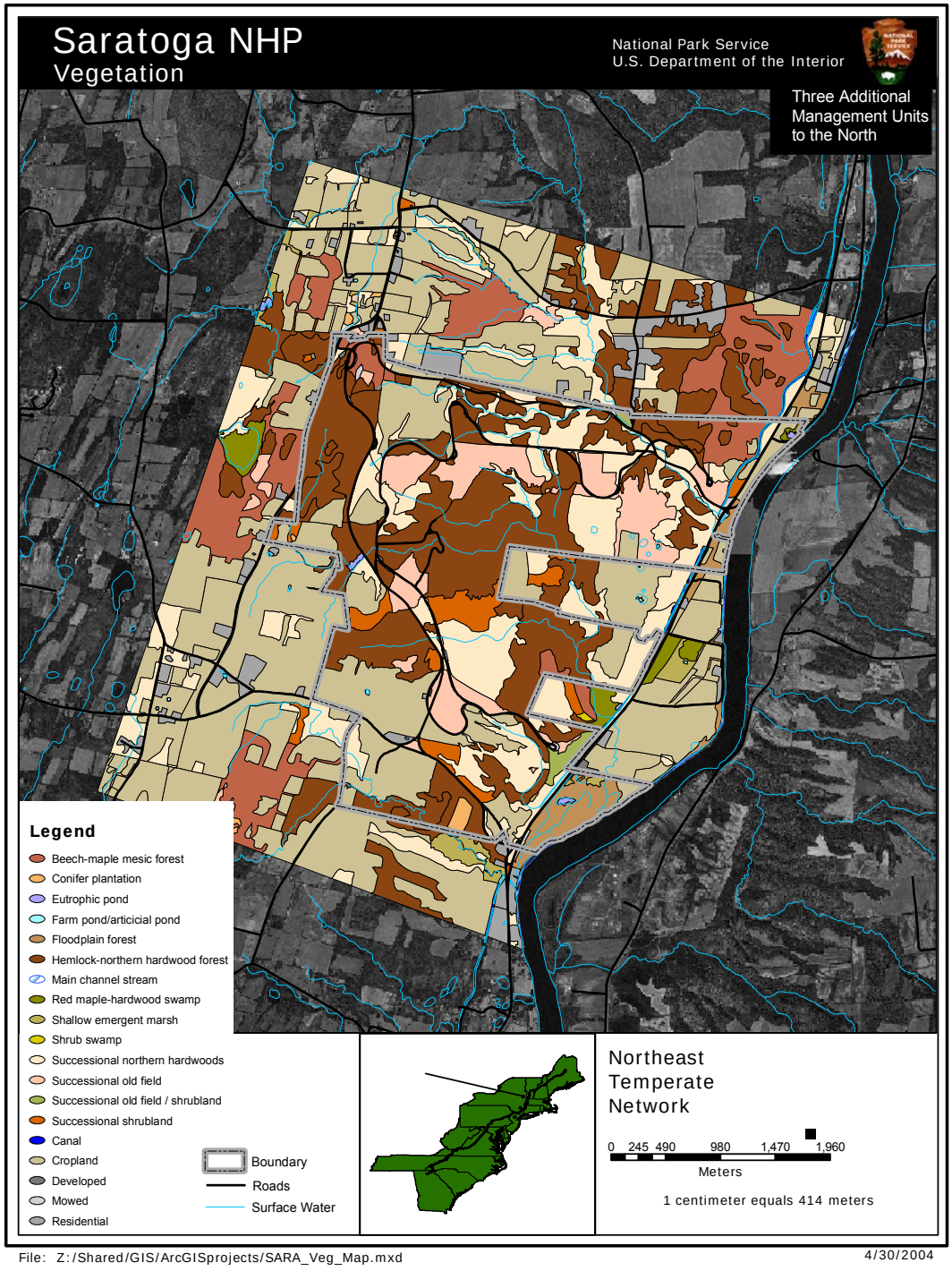

Figure A.17. Vegetation cover at Saratoga NHP.

Saugus Iron Works National Historic Site (SAIR) Saugus, Massachusetts

Background

Saugus Iron Works National Historic Site, established in 1968, is the site of the first integrated ironworks in North America (1646-1668), and hosts 25,000 visitors annual. The site includes a reconstructed blast furnace, forge, rolling mill, and a restored seventeenth century house. With the archeological site of the seventeenth-century iron-making plant, the museum collection, the seventeenth-century Iron Works House, and the reconstructed iron works complex, Saugus Iron Works National Historic Site illustrates the critical role of iron making to seventeenth-century settlement and its legacy in shaping the early history of the nation. The site's enclave setting on the Saugus River, featuring an open-air museum with working waterwheels evokes a unique experience for park visitors. These resources demonstrate seventeenth-century engineering and design methods, iron-making technology and operations, local and overseas trade, and life and work in the Massachusetts Bay Colony.

The site is a southern gateway to the Essex National Heritage Area, linking thousands of historic places in Essex County related to three primary historic themes: colonial settlement, maritime trade, and early industrialization.

The site is approximately 8-acres, and is located on the Saugus River in the Northeastern Coastal Zone ecoregion. Noteworthy natural resources include a floodplain, an emergent marsh wetland, riparian woodland, and the Saugus River. A total of 160 plants species are reported for the site. Exotic species are an issue for maintaining the marsh and the cultural landscape. The invading plants dominate the marsh and adjoining areas. The most abundant is Common Reed (*Phragmites australis*), but Purple Loosestrife (*Lythrum salicaria*), Japanese Knotweed (*Polygonum cuspidatum*), Multiflora rose (*Rosa multiflora*), and Curly Pondweed (*Potamogeton crispus*) are also present.

Prominent landscape features were dramatically altered in 1957 when an upstream dam was breached and caused a massive in-fill of silt to the site’s harbor. The aforementioned wetland marsh, dominated by invasive species, has since become established around the now channelized river, obscuring the recently reconstructed harbor and its role in the original iron making operation.

Mission

To preserve and interpret the archeological sites and features, the historic and reconstructed structures and scene, and the museum collections associated with America's first sustained, integrated, and successful iron works venture, which operated at this site from 1646 to about 1670.

- To assist in the interpretation of the Essex National Heritage Area, especially the theme of early settlement.

Legislation

Document	Description
General Management Plan, 2002	There are three fundamental objectives: "to preserve the distinctive character of park resources, to provide for quality visitor experiences, and to ensure organizational effectiveness." These goals support the mission to "preserve and interpret the archeological sites and features, the historic and reconstructed structures and scene, and the museum collections associated with America's first sustained, integrated, and successful iron works venture."
Resource Management Plan, 2003	The four resource areas identified are: landscaped areas, the Saugus River, wetlands, and riparian woodlands. Some of the goals of the RMP are to increase awareness of the park's natural resources and determine "how ecosystem stressors affect these natural resources."
Enabling Legislation, 1968	"Preserve in public ownership the first sustained integrated iron works in the Thirteen Colonies." • 1968: Public Law 90-282, an act to authorize the Secretary of the Interior to acquire the Saugus Iron Works and administer it as a National Historic Site. • November 12, 1996: Public Law 104-333, an act to establish the Essex National Heritage Area to recognize, preserve, promote, interpret, and make available for the benefit of the public resources that encompass the primary themes of the Salem Maritime National Historic Site and Saugus Iron Works National Historic Site.

Natural Resources

Habitat/land-use	Natural Resource Issues
• Saugus River (non-tidal) • Riparian marsh - 4 acres • Riparian woodland - 1 acre • Developed land - 3 acres • Landscaping - 1 acre • Seeps/springs	• Invasive exotic species • Wetland restoration • Sedimentation • Hydrologic alteration • Water quality • Contamination • Atmospheric deposition/ozone • External land-use/development • Roads • Visitor impacts • Canada geese • Climate change

Vital Signs and Related GPRA Goals			
Category (Level 1)	**Element (Level 2)**	**Vital Signs and Measures[1]**	**GPRA Goal[2]**
Air and Climate	Air Quality	Acidic deposition and stress, air contamination	None established

Vital Signs and Related GPRA Goals			
Category (Level 1)	**Element (Level 2)**	**Vital Signs and Measures[1]**	**GPRA Goal[2]**
	Weather and Climate	Air temperature, precipitation by type, relative humidity, total solar radiation, wind speed and direction, snow water equivalent and depth	None established
Geology and Soils	Geomorphology	stream geomorphology	None established
Water	Hydrology	Water depth and duration	None established
	Water Quality	Water chemistry, nutrient enrichment, contamination, aquatic macroinvertebrates	By September 30, 2005, the Saugus River which runs through the Saugus Iron Works National Historic Site will continue to have impaired water quality.
Ecosystem Pattern and Process	Land Use/Land Cover	Monitor changes within and adjacent to park	None established
Biological Integrity	Species of Special Concern	wetland and forest communities; forest vegetation; mammals, fish, and birds	None established
	Exotic Plant Species	Early detection of exotic species	By September 30, 2005, 1 (25%) of 4 acres of Saugus Iron Works' lands impacted by exotic vegetation targeted by September 30, 1999, are contained.
	T&E Species	Not a selected vital sign or measure	None established
Human Use	Visitor Usage	Identify and monitor impacts associated with increased visitation	None established
	Visitor Satisfaction	Not a selected vital sign or measure	By September 30, 2005, 100% of visitors to Saugus Iron Works National Historic Sites are satisfied with appropriate park facilities, services, and recreational opportunities.
	Resource Knowledge	Not a selected vital sign or measure	None established
	Vital Signs		By September 30, 2005, Saugus Iron Works National Historic Site have identified Saugus' vital signs for natural resource monitoring.

Notes:
[1] Vital signs and measures were identified by park staff, network staff, and cooperators to fulfill the objectives of the National Park Service Inventory and Monitoring program, and may not directly parallel the needs and/or requirements of any established GPRA goals.
2 GPRA Goals may not exist for all vital signs and/or measures, and not all GPRA Goals are identified on this list.

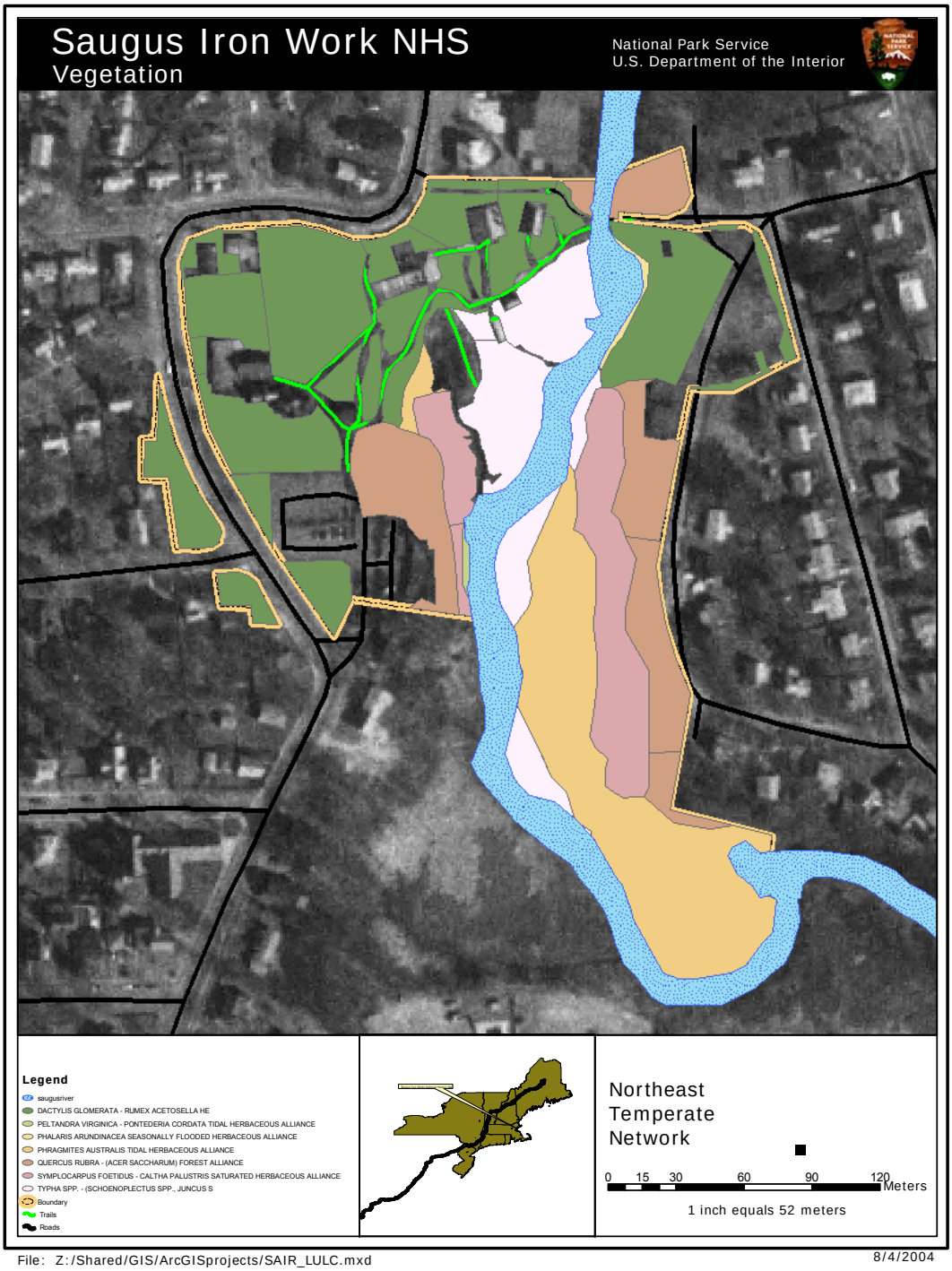

Figure A.19. Vegetation at Saugus Iron Works NHP.

Weir Farm National Historic Site (WEFA) Wilton, Connecticut

Background

Weir Farm preserves the home of nineteenth century American Impressionist Julian Alden Weir. Established as a national historic site in 1990, it protects one of the last intact landscapes associated with American Impressionism and maintains the integrity of an area that has inspired artistic expression.

The 75-acre park is located in the Northeastern Coastal Zone ecoregion in the southern part of Connecticut, and is within 25-miles of the Atlantic coast (Long Island Sound). The park contains open fields, successional forest and several wetland complexes and ephemeral surface streams. The ecological value of this small park is enhanced by adjacent forested land protected by The Nature Conservancy.

Weir Pond, a 4-acre, stream and groundwater fed, manmade pond is a prominent component of the Park landscape. The Weir Pond Dam, built to create the pond in 1896, has deteriorated and now presents an important management issue. In 1998, the Brooklyn Botanical Garden located five state listed plant species within the park. A number of invasive species at the site, including black swallowort (*Vincetoxicum nigrum*), Asiatic bittersweet (*Celastrus orbiculatus*), Japanese Barberry (*Berberis thunbergii*) and Garlic Mustard (*Allaria officinalis*) threaten the park's natural communities.

Mission

"…to maintain the integrity of a setting that inspired artistic expression…"
Preserve, and interpret the landscapes, buildings and objects which together form a place of central importance to the art of Julian Alden Weir and the American Impressionist movement, and to provide for the continuation of the site's artistic tradition. Maintain the integrity of the setting and to offer opportunities for the inspirational benefit and education of the American people.

Legislation

Document	Description
General Management Plan, 1995	The goals of the GMP are to preserve the integrity of Weir Farm and the "artistic legacy that is preserved throughout the site." This will be done through the preservation of the buildings, landscape, gardens, and pond.
Resource Management Plan, 1995	Weir Farm has a dam, pond, wetlands, forest land, and meadows. "WEFA will continue to provide a valuable picture of the past state of natural resources in the area." Objectives of the RMP include maintaining, restoring, or simulating the natural terrestrial, aquatic and atmospheric ecosystem conditions, in addition to maintaining or restoring indigenous flora, fauna, and natural communities of the "natural zones."
Enabling Legislation, 1990	"…to maintain the integrity of a setting that inspired artistic expression…" • 1990: Public Law 101-485, established Weir Farm National Historic Site.

Document	Description
	• 1994: Public Law 103-449, Title II, The Weir Farm National Historic Site Expansion Act, added the "last remaining undeveloped parcels of the historic Weir Farm still in private ownership" to the site. • 1998: Public Law 105-363, authorized the addition of up to 15 acres for visitor and administrative facilities

Natural Resources

Terrestrial habitat	Aquatic/wetland habitat	Springs/seeps
• Deciduous forest - 30 acres • Fields -15 acres • Developed - 5 acres	• Wetlands - 7 acres • Weir Pond - 4 acres • Streams • Vernal pools	• Natural Resource Issues • Invasive exotic species • External land-use/development • Roads • Land management • Atmospheric deposition/ozone • Water quality • Visitor impacts • Deer, feral animals/pets • Climate change

Vital Signs and Related GPRA Goals			
Category (Level 1)	**Element (Level 2)**	**Vital Signs and Measures[1]**	**GPRA Goal[2]**
Air and Climate	Air Quality	Ozone, acidic deposition and stress, air contamination	None established
	Weather and Climate	Air temperature, precipitation by type, relative humidity, total solar radiation, wind speed and direction, snow water equivalent and depth	None established
Geology and Soils	Geomorphology	lake morphometry	None established
Water	Hydrology	Water depth and duration	None established
	Water Quality	Water chemistry, nutrient enrichment, contamination, aquatic macroinvertebrates	By September 30, 2005, Weir Farm NHS has unimpaired water quality. Baseline Year: 2000 Target Year: 2005
Ecosystem Pattern and Process	Land Use/Land Cover	Monitor changes within and adjacent to park	None established
Biological Integrity	Species of Special Concern	Wetland, forest, and freshwater communities; forest vegetation; mammals, fish, and birds	None established

Vital Signs and Related GPRA Goals			
Category (Level 1)	**Element (Level 2)**	**Vital Signs and Measures[1]**	**GPRA Goal[2]**
	Exotic Plant Species	Early detection of exotic species	By September 30, 2005: Exotic vegetation on 8 of 30 targeted acres is contained. Baseline Year: 1999 Target Year: 2005
Human Use	Visitor Usage	Identify and monitor impacts associated with increased visitation	None established
	Visitor Satisfaction	Not a selected vital sign or measure	None established
	Resource Knowledge	Not a selected vital sign or measure	By September 30, 2005: 7 of 9 (78%) primary Weir Farm NHS natural resource inventories identified in the Resource Management Plan and General Management Plan are completed. Baseline Year: 1999 Target Year: 2005

Notes:
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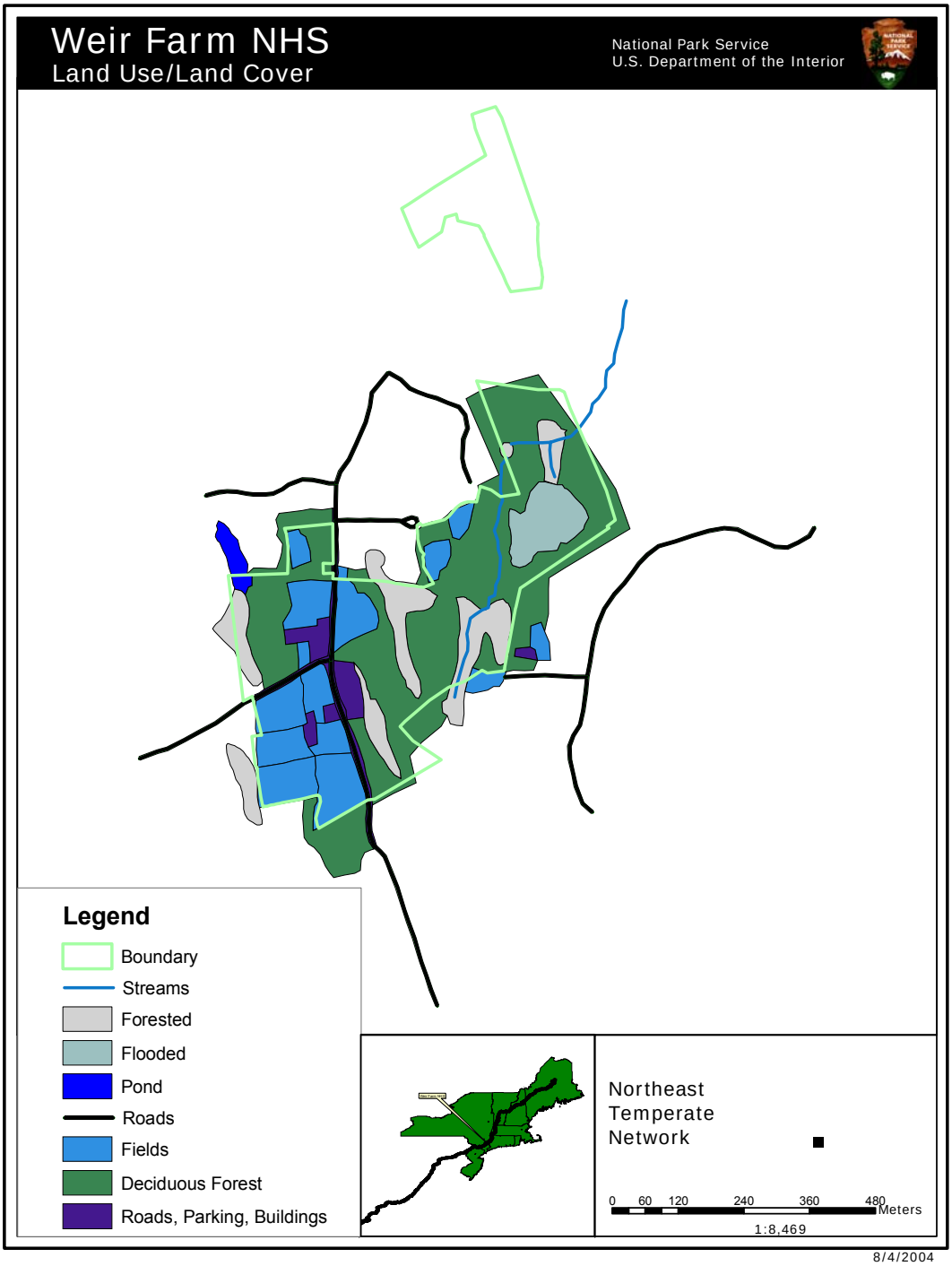

Figure A.22. Basic land cover at Weir Farm NHP.

Potential natural resource threats to the NETN parks (present or future) as indicated by natural resource staff. The level of each threat is identified by; 0 = not a threat, 1 = low threat, 2 = high threat w/ present mgt. concern. Categories were added during this process resulting in blank cells for parks that have not seen the additional categories at the time of this draft.

Potential Threats to Park Natural Resources	ACAD	APPA	BOHA	MABI	MIMA	MORR	ROVA	SAGA	SAIR	SARA	WEFA
Air Quality											
Acid Deposition	2	2	1	2	1	2	1	2	1	1	1
Ozone	2	2	1	1	2	2	1	2	1	2	1
Visibility	2	2	1	1	1	2	1	1	1	1	1
External Development											
Cell/Wind Towers	2	2	0	1	2	2	1	2	0	2	1
Encroachment	2	2	1	2	2	2	2	2	0	2	2
Habitat Fragmentation	2	2	1	2	2	2	2	2	0	2	2
Marinas/moorings	0	0	1	0	0	0	0	0	0	1	0
Oil Spills	2	1	0	0	1	1	1	1	1	1	0
Pipeline operations	0	2	1	0	1	0	0	0	0	0	0
Residential/commercial	2	2	0	1	2	2	2	2	1	2	2
Roads	2	2	0	1	2	1	2	2	1	1	1
Septic Systems	2	0	2	0	1	2	2	2	0	1	2
Sound	1	2	1	0	2	2	1	2	1	1	2
Utility right of ways	1	2	0	0	1	0	1	1	1	0	1
Viewsheds	1	2	0	1	1	1	1	1	2	2	1
Night Sky	1	1	0	1	0	0	0	1	0	1	0
Visitor Impacts											
Boat Traffic	1	0	2	0	1	0	0	0	0	1	0
Car Traffic	2	1	1	0	2	2	1	1	0	1	2
Horseback riding	0	1	0	1	0	1	0	0	0	1	2
Over fishing	2	0	0	0	0	0	0	1	0	0	1
Soil compaction	2	2	1	1	1	1	1	1	0	0	2
Hiking Trail Impacts	1	2	2	1	1	1	1	1	0	1	1
Contaminants/Toxics											
PCB	1	1	1	0	1	1	1	1	1	2	0
Hg	2	2	1	0	1	0	1	1	1	2	0
Pb, Zn, Cd	1	2	1	0	0	0	0	0	0	2	0
Natural Disasters											
Droughts	1	1	1	1	1	1	1	1	1	1	1
Floods	0	1	1	0	1	1	1	1	1	1	0
Ice storms	1	1	0	1	1	1	1	1	1	1	2
Wind Events	1	1	2	1	1	1	1	1	1	1	1
Fire	1	1	0	0	0	0	0	0	0	1	0

Potential Threats to Park Natural Resources	ACAD	APPA	BOHA	MABI	MIMA	MORR	ROVA	SAGA	SAIR	SARA	WEFA
Internal Park Development	1	1	1	0	0	0	1	0	1	1	0
Nuisance Wildlife											
Beaver	2	1	0	1	2	0	1	0	0	1	0
Raccoons	2	0	1	0	1	1	1	1	1	1	0
Fox	1	0	1	0	1	0	0	0	0	0	0
Feral cats/dogs	1	0	1	1	1	1	1	1	1	1	1
Canada geese	0	0	0	0	0	0	0	0	2	0	0
Woodchuck	0	0	0	0	0	0	0	0	0	0	2
Deer over browsing	0	1	0	2	1	2	2	1	0	2	2
Pest Species (parasites/pathogens)											
Asian Long-Horn Beetle	1	1	0	1	1	2	0	2	1	1	2
Gypsy Moth	1	2	0	1	2	2	1	1	1	1	1
Hemlock wooly adelgid	2	2	0	1	2	2	2	2	0	1	2
Lyme Disease	2	2	1	1	2	2	2	1	1	2	2
West Nile Virus	1	1	1	1	1	2	2	1	2	1	2
Chronic Wasting Disease	0	1	0	1	0	1	1	1	0	1	0
Water Quality											
Agricultural Runoff	1	1	0	1	1	0	0	2	0	1	0
Eutrophication	2	1	0	1	1	0	1	2	2	1	1
Land use change	2	2	0	0	2	2	2	2	2	2	1
Non-point pollution	2	1	2	1	1	2	2	2	2	1	1
Nutrient Loading	2	1	2	1	1	0	2	2	2	1	1
Point pollution	1	2	2	0	1	2	0	1	2	0	0
Road Runoff	1	1	0	1	1	1	1	2	2	1	1
Sedimentation	1	1	1	2	1	1	1	2	2	1	1
Stream bank erosion	1	1	0	1	1	1	0	2	1	1	1
Wastewater treatment	0	1	1	0	1	0	1	0	2	0	0
Climate Change											
Coastal erosion	1	0	2	0	0	0	0	0	0	0	0
Alpine recession	2	2	0	0	0	0	0	0	0	0	0
Sea level rise	1	0	2	0	0	0	1	0	1	0	0